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MEDITERRANEAN PILOT

VOL. II

COMPRISING
THE SOUTHERN COAST OF FRANCE FROM CAP
CERBERE TO THE FRANCO-ITALIAN FRONTIER,
THE ISLAND OF CORSICA, AND THE WESTERN
AND SOUTHERN COASTS OF ITALY FROM THE
FRANCO-ITALIAN FRONTIER TO CAPO SANTA
MARIA DI LEUCA, INCLUDING ARCIPELAGO
TOSCANO

EIGHTH EDITION
1952

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To be filled in by Navigating Officer.

(In Chart Dépôts the first two columns are alone to be filled up.)

| Title. | Date of Publication and Number. | Date of insertion of Note in Margins of Book. |
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NOTICE.

This volume should not be used without reference to the latest Supplement and Annual Summary of Notices to Mariners affecting it which may have been published.

A Supplement to this volume will generally be published annually until the latter is again taken up for revision.

After the publication of Supplement No. 1, each succeeding supplement cancels the former.

Between the time of the volume being taken up for revision and the publication of the new edition no supplement will be issued, but early in each year a Summary of the Admiralty Notices to Mariners affecting the volume, which have been published during the preceding year, will be issued as a separate publication.

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The latest Supplement and any Annual Summary of Notices to Mariners that has been published affecting this volume will be obtainable gratuitously by purchasers of this volume from the Agents for the sale of Admiralty charts and other Hydrographic publications, on application either personally or by letter; in the latter case the cost of postage must be enclosed. For a list of these Agents *see* Admiralty Notice to Mariners No. 2, published annually.

Gt. Brit. Hydrographic Office.

MEDITERRANEAN PILOT

VOL. II

COMPRISING

THE SOUTHERN COAST OF FRANCE FROM CAP CERBÈRE TO THE FRANCO-ITALIAN FRONTIER, THE ISLAND OF CORSICA, AND THE WESTERN AND SOUTHERN COASTS OF ITALY FROM THE FRANCO-ITALIAN FRONTIER TO CAPO SANTA MARIA DI LEUCA, INCLUDING ARCIPELAGO TOSCANO

EIGHTH EDITION, 1952

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1952

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To face page ii.]

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CAUTION.

IN THIS WORK THE BEARINGS ARE REFERRED TO THE TRUE COMPASS, AND WHEN GIVEN IN DEGREES ARE RECKONED CLOCKWISE, FROM 000° (NORTH) TO 359°.

THE BEARINGS OF LIGHTS ARE GIVEN FROM SEAWARD.

THE LATITUDES AND LONGITUDES GIVEN IN THE TEXT ARE APPROXIMATE.

THE DISTANCES ARE EXPRESSED IN SEA-MILES OF 60 TO A DEGREE OF LATITUDE.

A CABLE'S LENGTH IS ASSUMED TO BE EQUAL TO THE TENTH PART OF A SEA-MILE. IT IS OFTEN ACCEPTED AS BEING ONE-TENTH OF A NAUTICAL MILE.

THE DEPTHS ARE GIVEN BELOW CHART DATUM LEVEL WHERE NOT OTHERWISE STATED.

HEIGHTS ON THE LAND ARE GIVEN ABOVE MEAN LEVEL OF HIGH WATER SPRING TIDES.

FIGURES IN BRACKETS GIVEN AFTER THOSE DENOTING FEET, FATHOMS AND YARDS ARE THEIR EQUIVALENTS IN METRES.

TIME IS EXPRESSED IN THE FOUR-FIGURE NOTATION COMMENCING AT MIDNIGHT.

THE TERM "POWER VESSEL" USED HEREIN INCLUDES ANY VESSEL PROPELLED BY MACHINERY.

A NAME IN BRACKETS, IMMEDIATELY FOLLOWING ANOTHER NAME, IS THE OBSOLETE NAME WHICH IS STILL SHOWN ON THE ADMIRALTY CHARTS. AS A GENERAL RULE, THE BRACKETED NAME IS ONLY INSERTED IN THE DESCRIPTION OF THE PLACE OR OBJECT PREVIOUSLY BEARING THAT NAME.

WHEN SHADING IS USED TO INDICATE COLOURS OF FLAGS, TIDAL LIGHT SIGNALS, OR BEACONS, IT IS AS FOLLOWS:



Yellow.



Red.



Blue.



Green.



Black.

ADVERTISEMENT TO THE EIGHTH EDITION

The Mediterranean Pilot, Vol. II, contains a description of the southern coast of France from Cap Cerbère to the Franco-Italian frontier, the island of Corsica, and the western and southern coasts of Italy from the Franco-Italian frontier to Capo Santa Maria di Leuca, including Arcipelago Toscano.

This, the eighth edition, has been prepared by Captain J. N. Tait, C.B.E., D.S.C., R.N., and contains the latest information received in the Hydrographic Department.

The meteorological information has been revised by the Meteorological Office of the Air Ministry. Temperature is expressed in degrees Fahrenheit; rainfall in inches; speed in knots; and distance in sea miles, unless otherwise stated. Information received from meteorological services which do not use these units has been converted into the units mentioned above by the Meteorological Office.

Mariners and others are invited, in the interests of navigation, to forward to the Hydrographer of the Navy, Admiralty, Oxgate Lane, Cricklewood, London, N.W.2, any information that may come under their notice, which would be useful for the correction of the charts and other hydrographic publications issued by the British Admiralty; *early* advice as to newly discovered dangers, the establishment of or changes in any aids to navigation, is specially requested.

Copies of a form (H.102) on which to render information can be obtained gratis from the Hydrographer of the Navy, Hydrographic Supplies Establishment, Creechbarrow House, Taunton, Somerset, or from any of the Admiralty Chart Agents in Great Britain and abroad, a list of whom is published annually in Admiralty Notice to Mariners No. 2.

By the publication of this volume, the seventh edition of Mediterranean Pilot, Vol. II, and Supplement No. 8, 1949, are cancelled, and all information affecting that work contained in Notices to Mariners up to and including No. 24 of 1952 has been embodied in this volume. For Temporary and Preliminary Notices to Mariners affecting this edition, the list of Temporary and Preliminary Notices to Mariners in force, published monthly in the weekly edition of the Admiralty Notices to Mariners, should be consulted.

A. DAY,
Rear-Admiral,
Hydrographer of the Navy.

Hydrographic Department,
Admiralty, London.
2nd January, 1952.

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The following publications, other than British Government publications, have been consulted in the preparation of this edition :—

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Phares et Signaux de Brume, Serie D, No. 228, Mer Méditerranée, Mer Adriatique et Mer Noire, 1948, and Fascicule des Corrections, 1951.

For the coasts of Italy.—

Portolano del Mediterraneo N. 1, Mar Ligure e Alto Tirreno da Ventimiglia a Capo Circeo, 1947.

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Elenco dei Fari, e Segnali da Nebbia, Parte I, 1950.

For general purposes.—

The Statesman's Year Book, 1951.

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GLOSSARY

OF FRENCH AND ITALIAN GEOGRAPHICAL TERMS AND
WORDS WHICH ARE USED WITH, OR WHICH OCCUR IN,
PLACE-NAMES USED IN THIS VOLUME

FRENCH

| French | English | French | English |
|------------------|--------------------------|--------------------------------|--------------------------------|
| anse . . . | bay, creek | maison . . . | house |
| avant port . . . | outer harbour | marais . . . | swamp, marsh |
| | | marine . . . | marine, navy |
| baie . . . | bay, gulf | mer . . . | sea |
| balise . . . | beacon | môle . . . | mole, pier |
| banc . . . | bank | mont . . . | mount, mountain |
| barre . . . | bar | montagne . . . | mount, mountain |
| basse . . . | shoal | morne . . . | hill |
| bassin . . . | basin, dock | mouillage . . . | anchorage |
| batterie . . . | battery | | |
| blanc . . . | white | neuf, ve . . . | new |
| bouche . . . | mouth of river or strait | noir, e . . . | black |
| | | nord . . . | north |
| calanque . . . | creek | nouveau . . . | new |
| canal . . . | canal, channel | | |
| cap . . . | cape, headland | ouest . . . | west |
| chaîne . . . | chain | | |
| château . . . | castle | passe . . . | pass, channel |
| chaussée . . . | causeway | petit, e . . . | small |
| chenal . . . | channel | pic . . . | peak |
| col . . . | mountain pass | plage . . . | beach |
| colline . . . | hill | plateau . . . | tableland, shoal |
| côte . . . | coast | pointe . . . | point |
| | | pont . . . | bridge |
| darse . . . | basin | port . . . | port, harbour |
| digue . . . | dike, mole | presqu'île . . . | peninsula |
| | | | |
| écueil . . . | shoal, rock | quai . . . | quay, wharf |
| épi . . . | groyne | | |
| est . . . | east | rade . . . | roadstead |
| étang . . . | lake, lagoon | rivière . . . | river |
| | | roche . . . | rock |
| fleuve . . . | river, stream | rocher . . . | rock, generally above water |
| fosse . . . | ditch | rouge . . . | red |
| | | ruisseau . . . | stream |
| golfe . . . | gulf, bay | | |
| grand, e . . . | great | sable . . . | sand |
| grau . . . | channel | saline . . . | salt works |
| gros . . . | large, heavy | sommet . . . | summit |
| | | sud . . . | south |
| haut-fond . . . | shoal, shallow | | |
| | | torrent . . . | stream, torrent |
| île . . . | island | tour . . . | tower |
| flot . . . | islet | trou . . . | small opening in coast |
| isthme . . . | isthmus | | |
| | | vieux, vieil, vieille . . . | old |
| jetée . . . | jetty | | |
| lac . . . | lake | | |

ITALIAN

| Italian | English | Italian | English |
|---------------------|------------------------------|----------------------|-----------------------|
| alto, a . . . | high, lofty | molo . . . | mole |
| ancoraggio . . . | anchorage | montagna . . . | mountain |
| antemurale . . . | seawall | monte . . . | mount, mountain, hill |
| arcipelago . . . | archipelago | | |
| | | nero . . . | black |
| bacino . . . | basin, dock | nuovo . . . | new |
| baia . . . | bay | | |
| banchina . . . | quay, wharf | palude . . . | swamp, marsh |
| banco, banchi | bank, banks | passo . . . | pass, channel |
| barra . . . | bar | penisola . . . | peninsula |
| bassafondo . . . | shoal, shallow | piano . . . | plain, flat |
| bianco . . . | white | picco . . . | peak |
| bocca, bocche | mouth of river, strait, s | piccolo, picciolo | small, little |
| | | pietra . . . | stone |
| cala, calanca . . . | creek, small bay | poggio . . . | mound, small hill |
| calata . . . | wharf | ponte . . . | bridge |
| campanile . . . | belfry, steeple | pontile . . . | pier |
| canale . . . | canal, channel | porto . . . | port, harbour |
| capo . . . | cape, headland | promontorio . . . | promontory |
| casa . . . | house | punta . . . | point |
| casino . . . | country house | | |
| castel, castello | castle | rada . . . | roadstead |
| citta . . . | city, town | rosso . . . | red |
| collina . . . | hill | rotondo . . . | round |
| | | | |
| darsena . . . | basin, wet dock | sabbia . . . | sand |
| diga . . . | breakwater, mole | salina . . . | salt water lagoon |
| | | santo . . . | holy, sacred |
| fiumara . . . | river | sciocco . . . | south-east |
| fiume . . . | river | scogli . . . | reef |
| fiumicino . . . | rivulet | scoglio . . . | rock, reef |
| forte . . . | fort | scogliera . . . | ridge of rocks |
| fortino . . . | small fort | secca . . . | shoal, sandbank |
| | | secche . . . | group of shoals, reef |
| golfo . . . | gulf, bay | seno . . . | small bay, creek |
| grande . . . | great | spiaggia . . . | beach |
| | | stagno . . . | lake, pond |
| imboccatura . . . | mouth of a river | strada . . . | road |
| insenatura . . . | cove, inlet | stretto . . . | strait |
| isola, isole . . . | island, islands | | |
| isolotto . . . | islet | testa, testata . . . | head |
| istmo . . . | isthmus | tondo . . . | round |
| | | torre . . . | tower |
| lago . . . | lake | torrente . . . | stream, torrent |
| levante . . . | east | tramontana . . . | north |
| | | | |
| mare . . . | sea | valle . . . | valley |
| marina . . . | beach, landing place | vecchio . . . | old, ancient |
| | | via . . . | road, street |
| | | villa . . . | villa |

SYSTEM OF ORTHOGRAPHY

The following rules for the spelling of geographical names (termed the R.G.S. II system) have been adopted for British official use, and the names in Admiralty Hydrographic publications will be rendered in accordance with these rules as opportunity occurs.

In new editions of the various volumes of sailing directions names are, generally speaking, given in accordance with these rules, but where the name on the chart shows an older rendering of a name, such chart name is given in brackets after the new rendering and will also be given in the Index.

The rules for spelling in the R.G.S. II system are as follows :—

- (1) The spelling of every place-name in an independent country or self-governing dominion using the Roman alphabet (including "Roman" alphabets containing extra or modified letters, such as Czech, Serb-Croat, Polish, Romanian, etc.) shall be that adopted by the country or dominion.
- (2) In colonial possessions the spelling of such place-names as belong to languages coming under Rule (1) will be spelt in accordance with that rule.
- (3) The accents and diacritical marks in official use by the above countries will be retained. Wherever it appears desirable, the pronunciation will be shown by giving the name as transliterated on the system below.
- (4) All other place-names throughout the world will be spelled in general accordance with the following system.

The broad features of this system are

- (a) That vowels are pronounced as in Italian and consonants as in English :
- (b) That every letter is pronounced, and no redundant letters are used.

This system aims at giving a close approximation to the *local* pronunciation; but it is recognised that in some languages, notably Russian, Greek, and Arabic, the necessity for letter-for-letter transliteration often renders this impossible.

TABLE OF SPELLING AND PRONUNCIATION R.G.S. II.

| | | |
|------------------------------------|---|---|
| a | The long and short Italian vowels, as in <i>lāvā</i> .. | Somāli; Rāvennā.* |
| ā | Between <i>a</i> in <i>fat</i> and <i>e</i> in <i>eh</i> ?; chiefly in Teutonic and Finno-Ugrian languages | Māhring; Pärnu. |
| ai | The two Italian vowels, frequently diphthongal, almost as in <i>aisle</i> ; but pronounced <i>ei</i> and <i>ē</i> in Greek names.. .. . | Wadai; Shanghai. |
| au | The two Italian vowels; frequently diphthongal; almost as <i>ou</i> in <i>out</i> | Sakau; Bauchi |
| aw | When followed by a consonant, or when terminal, as in <i>awl</i> , <i>law</i> | Dawna; Saginaw. |
| b | As in English. | |
| c | Not to be used, but always replaced by <i>k</i> or <i>s</i> ; except in the compound <i>ch</i> , and in many conventionally-spelt words, as | Kandahar; Serang. Calcutta; Celébes. |
| ch | As in <i>church</i> ; never <i>tch</i> or <i>tsch</i> for this sound .. | Chad; Kerch. |
| d† | As in English. | |
| dh | Soft <i>th</i> as in <i>they</i> ; a slight <i>d</i> sound sometimes preceding it in Semitic languages | Hadhramaut; Riyadh. |
| e | Long as in <i>eh</i> ? short as in <i>bet</i> . (For the <i>e</i> sound in the French <i>je</i> , see note at end on the "neutral vowel.") | Gēlo; Mafēking.* |
| (ee) | Used for <i>i</i> (<i>q.v.</i>) only in a few conventional names | Darjeeling; Keelung. |
| ei | The two Italian vowels, frequently diphthongal as in <i>rein</i> , but pronounced <i>i</i> in Greek names .. | Beirut; Raheita. |
| (eu) | Not used as a single sound. | |
| f | As in English; <i>ph</i> must not be used for this sound | Mustafa; Maidan-i-Naftun. |
| g | Hard, as in <i>get</i> , <i>gift</i> : never as in <i>gem</i> , <i>gin</i> .. | Gedāref; Gilgit. |
| gh | Soft guttural, the Arabic <i>ghain</i> | Ghadames; Baghdad. |
| h | Used only when sounded; or in the compounds <i>ch</i> , <i>dh</i> , <i>gh</i> , <i>kh</i> , <i>sh</i> , <i>th</i> , <i>zh</i> | Ahmadabad; 'Abdullah. |
| i | Long as in <i>marine</i> ; short as in <i>piano</i> | Fiji; Kibonde. |
| j | As in English; except in transcription of Chinese, where it equals <i>zh</i> , or the French <i>j</i> | Juba, Ujiji (Eng. <i>j</i>); but Jaoping (Fr. <i>j</i>). |
| k | As in English; hard <i>c</i> should never be used (except in conventionally-spelt words)—thus, not <i>Corea</i> , <i>Cabul</i> , but | Korea; Kabul. |
| kh | Hard aspirated guttural, as in the Scottish <i>loch</i> (not as in <i>lock</i>) | Khan; Sebkhā. |
| l† m n† | } As in English. | |

*The long and short symbols given here are merely for explanation, not for use.

†See note at end on *Liquid Sounds*.

- ng** Has three separate sounds, as in *vanguard*, *finger*, and *singer*. If necessary to distinguish, a hyphen may be placed, as in *van-guard*, *singer-* .. In-galla; Bongo; Ng-ami; Tong-a.
- ngg** May be used for the sound of *ng* as in *finger* .. Trengganu; Yanggang-a.
- o** Long as in *both*¶: short as in *rotund* .. Kigōma; Hōnōlulu.*
- ō** As in German; equals the French *eu* in *peu*; or nearly the English sound in *fur* .. Barkōl.
- (oo)** Used for *u* (*q.v.*) only in a few conventional names, chiefly Indian and Chinese .. Poona; Foochow.
- oi** The two Italian vowels; frequently diphthongal as in *oil*, but pronounced like *i* in *fit* in Greek names Hanoi.
- ōi** The diphthong as in French *œil* and Norwegian *høi* Hōiland.
- ou** Dissyllabic, and not as French or English *ou*, except in Greek names where it has the French value Zlatoust; Yaroua.
- ow** Used as a diphthongal combination of *ō* and *w* only in the romanisation of Chinese .. Hankow.
- p** As in English.
- ph** As in *loophole*; not to be used for the *f*-sound, except conventionally .. Chemulpho; Haiphong.
- q** Represents *only* the Arabic *qaf* and the Hebrew *qof*; i.e. a guttural *k* (as a rule) .. Qena; Qiryath.
- qu** Should never be employed to represent the sound of *kw*; thus, not Namaqua, Quorra, but .. Namakwa; Kworra.
- r** As in English; should be distinctly pronounced.
- s†** As English *ss* in *boss*, not as in *these* or *pleasure* Burgos; Masikesi.
- sch** As in *discharge* .. Peschanka.
- sh** } As in English.
tt }
- th** Hard *th* as in *thick*, not as in *this* (except conventionally in Fijian) .. 'Athlith; Thingvellir.
- u** Long as in *rude*, or as *oo* in *boot*; short as in *pull* Zülū; Rūanda.*
- ti** As in German: equals the French *u*, as in *tu* (Fr.) Ūskūdar.
- v** } As in English.
w }
x }
- y** Always a consonant, as in *yard*; it should not be used as a terminal vowel, *e* or *i* being substituted; e.g. not Kwaly or Wady, but .. Kwale; Wadi.
- z** As in *gaze*, not as in *azure*.
- zh** As the *s* in *treasure*, the *x* in *azure*, or the French *j* in *je*; but for the sound in Chinese use *j* (*vide* note under *j*) .. Zhob.

*The long and short symbols given here are merely for explanation, not for use.
†See note at end on *Liquid sounds*.

¶The true Italian *ō* is broader than this; almost as in *broth* (= R.G.S. II *aw*).
The letter *o* is conventionally used for this sound in certain names in Nigeria, Tonga, etc.: e.g. Oyo, Fofoa.

NOTES.

The doubling of a vowel or a consonant is only necessary when there is a distinct repetition of the single sound, and should otherwise be avoided

Nuusafee; Moorea;
Jidda; Muhammad.

Accents should not generally be employed; but in order to indicate or emphasise the stress, an acute accent may be used

Saráwak; Qántara;
Tong-atábu; Paraná.

A long or short mark over a vowel (e.g. ā, ō) should only be used (and that sparingly) when without it there would be danger of mispronunciation ..

Kūt; Kyōto; Abōso.

Hyphens will not be used except to indicate pronunciation and with the particle -i- (in Persian, Fijian, etc.)

Ta-if; Pusht-i-Kuh;
Nuku-i-Ra.

Inverted comma and apostrophe.—The inverted comma ' is employed only to represent the Arabic *'ain*, the Maltese *'ghain*, and the Hebrew *'ayin*. The apostrophe ' in foreign words indicates a liquid sound (*see* below).

Liquid sounds.—The occasional "liquid" or "palatalised" sound of *d, l, n, s, t*, etc. (as in *d'you, lure, new, pursue, tune*, etc.) is as a rule sufficiently represented by a following *y*; where, however, owing to a following consonant, or to the palatalised letter coming at the end of a word, the *y* is inapplicable, the liquid sound will be represented by an apostrophe, thus: *d', l', n', s', t'*, etc.

The "Neutral vowel."—The "indeterminate" or "neutral" vowel sound (*er*), i.e. the sound of *a* in *marine*, *e* in *often*, *i* in *stir*, *io* in *nation*, *o* in *connect*, *ou* in *curious*, *u* in *difficult*, etc., *e* in French *je*, or the often unwritten vowel (*Fal-ha*) in Arabic, etc., is represented as a rule by *a*: as in Basra, Hawiya; but sometimes by *e*, when the sound approximates more to *e* than to *a*: as Meshed, El Gezira.

(In any guide to pronunciation issued by the Permanent Committee on Geographical Names, the "neutral vowel" is represented generally by the italic *e*: occasionally also by italic *a* or *u*.)

This sound must not be confused with *e-mute*, where the *e* is not sounded at all: as in Abbeville.

Nasal vowels.—In illustrating the pronunciation of French, Portuguese, Polish, etc., nasal vowels, the nasalisation will be represented by italic *n*; as Czystochowa *pr.* Chānstokhóva.

Note.—The Royal Geographical Society has published a book entitled "Alphabets of Foreign Languages transcribed into English according to the R.G.S. II system." This book enables the correct rendering of names to be obtained, also of names in languages which are transliterated letter for letter.

INFORMATION RELATING TO ADMIRALTY CHARTS AND PUBLICATIONS, GENERAL NAVIGATION, AND GENERAL METEOROLOGY.

ON THE CORRECTION OF ADMIRALTY CHARTS.

Guides to Navigation.—In addition to the charts, the navigational publications which are primarily affected by the continual changes and alterations that take place are the Admiralty Sailing Directions, the Admiralty List of Lights, Fog Signals and Visual Time Signals, and the Admiralty List of Radio Signals. The Admiralty Notices to Mariners contain information mainly for the correction of the charts and navigational publications. 5

CHARTS.

1. Degree of Reliance.—It should be clearly understood that the value of a chart depends on the character of the original survey and on the completeness of the reports of subsequent changes. The remarks on "The Use of Charts as Navigational Aids, &c." which are subjoined should be carefully studied in this connection. 10

2. System of Dating and Issue of Corrected Copies.—Admiralty charts after first publication are kept corrected by means of new editions, large corrections, and small corrections. Copies of charts issued by the Hydrographic Supplies Establishment, Admiralty Chart Agents or Admiralty Chart Dépôts are corrected, except from temporary and preliminary Notices to Mariners, for all navigational information to the date of issue. 15 20

New Charts.—The date of publication of a chart is shown outside the bottom margin, in the middle, e.g. :—

Published at the Admiralty 30th May, 1947.

New Editions.—When a chart is revised throughout and modernised in style a new edition is published, the date being shown outside the bottom margin and to the right of the date of publication, e.g. :— 25

New Edition 2nd Jany., 1947.

All large and small corrections notations are at the same time erased, and all old copies of the charts are cancelled. 30

Large Corrections.—When a chart is corrected from important information which is too comprehensive to promulgate by Admiralty Notice to Mariners or to insert conveniently by hand on existing copies, but when the chart is not revised throughout, the date on which these corrections are made is shown on the chart outside the bottom margin and to the right of the date of publication, and in the case of a chart already marked with a new edition date, below such date, e.g. :— 35

Large corrections 10th Feb., 1947.

All small corrections notations are at the same time erased, and all copies of the chart are cancelled.

Small corrections.—

- (i) When a chart is corrected from the information promulgated in an Admiralty Notice to Mariners (except temporary and preliminary Notices), the year, if not already shown, and number of the notice are entered in the bottom left-hand corner of the chart, e.g. :—

Small corrections 1947-903.

- Copies of the chart stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents and the Admiralty Chart Depôts are corrected by hand from such information.

- (ii) When a chart is corrected from information which is considered of no importance from the standpoint of safe navigation, and which is, therefore, not promulgated in an Admiralty Notice to Mariners, the year, if not already shown, and date of the correction are entered on the chart, in one of two ways, in the bottom left-hand corner below the margin and in sequence, with the notations referred to in the preceding paragraph, e.g. :—

*Small corrections, 1947—*5.20*—*

or Small corrections 1947—(VI.25)

- These indicate that the chart received minor corrections on the 20th May or 25th June, respectively.

- In such cases copies of the chart held by ships and establishments are not usually replaced by new copies, but in exceptional cases, e.g., when new compasses are inserted, new copies of the charts may be supplied. It should, however, be particularly noted that the absence of corrections represented by square or bracket dates from a chart does not invalidate it for navigation.

- 3. Correction of Charts in Ships.**—All small but important corrections affecting navigation that can be made to the charts by hand are promulgated in Admiralty Notices to Mariners and, with the exception of corrections from temporary or preliminary Notices, should at once be neatly made in waterproof violet ink on the charts affected, the year (if not already shown) and numbers of the notices being inserted, also in waterproof violet ink, in the bottom left-hand corner of the chart. The recognised abbreviations shown on Admiralty chart No. 5011 ("Signs and abbreviations used on Admiralty Charts") should be used.

Generally speaking, the amount of information which should be inserted on a chart should be in accordance with that already shown.

- On large scale charts*, the abridged descriptions, as shown on chart No. 5011, of all details of all lights, light-buoys and fog signals, and the year dates of obstructions, reported shoals, dredged channels, depth on bars or in shifting channels, and irregularities of lights, should be inserted.

- On coastal charts*, the abridged descriptions of only the principal lights and fog-signals, i.e., those to assist in approaching or making the land, should be inserted.

Particulars of such lights should be omitted, in the following order, as the scale of the chart decreases, viz. :—

- (i) Elevation, (ii) Period, (iii) Number in Group, and (iv) Visibility.

Particulars of fog signals should be inserted in their appropriate positions if space permits, but should otherwise be entered in a tabulated list under the title or some other convenient place on the chart. 5

Inner harbour light-buoys and beacons should not be inserted on coastal charts, and against other light-buoys only the character of the light should be inserted. 10

On ocean charts, lights which are visible 15 miles or over should alone be inserted and then only their character and colour.

On all charts, writing should be inserted as much as possible clear of the water, unless the relative objects are on the water, and care should be taken not to obliterate any information already on the chart. When cautionary or tidal notes, &c., are inserted, they should be written in a convenient but *conspicuous* place, preferably near the title, where they will not interfere with other details. 15

Erasures should never be made but the details should, when necessary, be crossed through in waterproof violet ink. 20

Admiralty Notices to Mariners are occasionally accompanied by reproductions of portions of charts (known as "blocks"), and when correcting charts from such blocks the following points should be borne in mind :—

- (i) A block may not only indicate the insertion of new information, *but also the omission of matter previously shown*. The latter would, however, invariably be mentioned in the text of the Notice, and the fact that a block accompanies a Notice should not cause the text of the Notice to be disregarded. 25 30
- (ii) The limiting lines of a block are determined for convenience of reproduction and need not be adhered to when cutting out for pasting on the chart, provided that the point mentioned in the preceding paragraph is taken into consideration. 35
- (iii) The new information shown on a block can sometimes be inserted on the chart by hand, the reason for issuing a block in such a case being to avoid a long description of the new information in the text of the Notice.
- (iv) Owing to distortion the blocks do not always fit the charts exactly, care should therefore be taken when pasting a block on to a chart that the more important navigational corrections fit as closely as possible. This can best be assured by fitting the block while it is dry and making two or three pencil ticks round the edges for use as fitting marks after the paste is applied. 40 45

Corrections from Temporary or Preliminary Notices to Mariners should be inserted on the charts *in pencil* and the year and number of the notice should be shown against them, e.g. :—N.M. 625/1947 temp., and also in the bottom left-hand corner of the chart, in pencil, *below* the small corrections notations (*see above*). Temporary corrections should be rubbed out when the notice is received cancelling them, but preliminary corrections should be inked in when the notice is received reporting that the changes have been made. 50

Charts stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents and the Admiralty Chart Depôts are *not* corrected from Temporary or Preliminary Notices to Mariners, and when charts are received from one of these sources they should be
 5 corrected in pencil as necessary from the copies of such Notices already held, or from those supplied with the charts.

Corrections from Radio Navigational Warnings concerning derelicts and drifting obstructions, the temporary extinction of lights, displacement of important aids to navigation, ice reports, &c., should also be
 10 noted *in pencil*, as received, on the charts affected. Radio Navigational Warnings of a permanent nature and those relating to derelicts and drifting obstructions dangerous to navigation are re-issued in the form of Admiralty Notices to Mariners, but other warnings are not re-issued in this way, except in special circumstances.

15 Corrections from information received from authorities other than the Admiralty should be noted, *in pencil*, on the charts affected, but no charted danger is to be expunged without the authority of the Hydrographer of the Navy.

NAVIGATIONAL PUBLICATIONS.

20 **1. Admiralty Sailing Directions, Supplements, &c.**—The Admiralty Sailing Directions, consisting of about 73 volumes for the whole world, contain general information useful to the navigator.

An index chart bound near the beginning of each volume shows the area dealt with and the serial numbers and limits of all Admiralty charts
 25 for the area which were published *when the volume was printed*.

Each volume is periodically revised throughout, and, in the intervals between the publication of new editions, Admiralty Notices to Mariners and Supplements are published to enable the volume to be corrected. It should, however, be clearly understood that Sailing Directions cannot
 30 be correct in all minor details after the date of the latest Supplement.

The above-mentioned corrections are not made in the Sailing Directions stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents or the Admiralty Chart Depôts.

A new edition of each volume of Sailing Directions is published at
 35 intervals of approximately from ten to twelve years. The number of the latest Admiralty Notice to Mariners used in its compilation is given in the "Advertisement" on page iii of each volume, and the numbers of the Notices affecting it between the dates of going to press and issue to ships and establishments are given in the Notice
 40 announcing its publication, to enable the new edition to be corrected before being brought into use.

A Supplement to each volume is generally published annually, each succeeding Supplement cancelling the former. When a volume is taken up for revision, however, no further Supplement to that edition
 45 is issued, but subsequent Notices to Mariners affecting it are summarised each year and issued as a separate publication, until the new edition of the volume is published.

A tabular form for notation of the existence of Supplements and Summaries of Notices is printed on the front fly-leaf of all Sailing
 50 Directions, and these notations are made as necessary in all copies issued by the Hydrographic Supplies Establishment and the Admiralty Chart Depôts.

Supplements and Summaries of Admiralty Notices to Mariners should be retained intact. *Whenever reference is made to the Sailing Directions, the Supplement, and where applicable the Summary, must be consulted.* The existence of a Supplement or Summary of Admiralty Notices to Mariners is to be entered in the tabular form inside the cover of the Sailing Directions. New and amended information appearing in the Supplements for the first time is indicated by square brackets, and deletions from the previous Supplement are indicated by horizontal lines. 5

Admiralty Notices to Mariners affecting Sailing Directions *are not* to be cut up and pasted in, but the book is to be annotated in the margin, or corrected in manuscript, as convenient. 10

2. The Admiralty List of Lights, Fog Signals and Visual Time Signals.—The Admiralty List of Lights, Fog Signals and Visual Time Signals for the world is issued in twelve volumes divided geographically as shown on the index chart at the beginning of each volume. 15

Light-buoys are *not* included in the list.

The volumes are published annually at the rate of one volume per month commencing with Volume 1 about March and ending with Volume 12 about February. Supplements to these volumes will not be issued. 20

Each volume will be issued with an inscription on its cover and title page stating the date to which the volume has been corrected, which will be approximately six weeks prior to the date of its issue. Corrections or additions to each volume, which may occur between the date of correction and date of issue, will be promulgated by Section III of Admiralty Notices to Mariners. 25

Amendments.—Important amendments are promulgated in Admiralty Notices to Mariners. In Section III of each Weekly Complete Edition of these Notices will be found all additions and alterations made to Lights, Fog Signals and Visual Time Signals by the Notices issued during the week affected; certain other additions and alterations are also included in Section III, which, though not of sufficient importance to necessitate the issue of a Notice to Mariners, will be found of use to the seaman. 35

Corrections to the Light Lists should be made in pencil, or extracted from Section III and pasted in the appropriate volume.

Note.—Corrections are not made in copies of the Lists of Lights, &c., stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents or the Admiralty Chart Depôts, and copies received from these sources should accordingly be corrected from the weekly editions of the Notices to Mariners before being brought into use. 40

3. The Admiralty List of Radio Signals.—The Admiralty List of Radio Signals is issued in three volumes. 45

Volume I.—Communications—Comprises particulars of radiotelegraph coast stations, together with general regulations; it also includes such subsidiary services as medical advice supplied by radio.

Volume II.—Navigational Aids—Comprises particulars of services from direction-finding stations, radiobeacons, and radio navigational aids (position fixing systems) together with radio time signals and navigational warnings (with ice signals); all relevant codes and regulations will be found in this volume. 50

Volume III.—Meteorological Services—Comprises particulars of weather services provided for the use of shipping, together with relevant codes and lists of meteorological observation stations. 55

New editions of each volume will normally be published annually.

All corrections subsequent to the date of publication are promulgated in Section VI. of the complete weekly edition of Admiralty Notices to Mariners.

- 5 Copies of the List stocked by the Hydrographic Supplies Establishment, Admiralty Chart Agents or the Admiralty Chart Depôts are not kept corrected, and Lists received from these sources should accordingly be corrected from the weekly editions of the Admiralty Notices to Mariners before being brought into use.
- 10 **4. The Admiralty Tide Tables.**—The Admiralty Tide Tables are published in three sections as follows:—
 For “EUROPEAN WATERS (including Mediterranean Sea).”
 For “ATLANTIC AND INDIAN OCEANS.”
 For “PACIFIC OCEAN AND ADJACENT SEAS.”
- 15 Each section contains two parts, Part I giving tidal predictions for Standard Ports and tidal stream predictions for certain straits and channels. Part II giving data for predicting tides at places which are not Standard Ports.
- 20 Admiralty Tide Tables, Part III, contains instructions for predicting tides and tidal streams, and for analysing observations of tides and tidal streams, with tables to assist prediction and analysis.

THE USE OF CHARTS AS NAVIGATIONAL AIDS 25 AND GENERAL REMARKS RELATING TO PRACTICAL NAVIGATION.

- (1) **Reliance on a chart.**—The value of a chart must manifestly depend upon the accuracy of the survey on which it is based, and this becomes more important the larger the scale of the chart.
- 30 To estimate this the date of the survey, which is always given in the title, is a good guide. Besides the changes that, in waters where sand or mud prevails, may have taken place since the date of the survey, the earlier surveys were mostly made under circumstances that precluded great accuracy of detail, and, until a plan
- 35 founded on such a survey is tested, it should be regarded with caution. It may, indeed, be said that, except in well-frequented harbours and their approaches, no surveys yet made have been so minute in their examination of the bottom as to make it certain that all dangers have been found. The fullness or scantiness of the soundings is another
- 40 method of estimating the completeness of a chart. When the soundings are sparse or unevenly distributed, it may be taken for granted that the survey was not in great detail.
- It appears to be insufficiently realised that the degree of reliance which may reasonably be placed upon an Admiralty chart, even in
- 45 surveys of modern date, is mainly dependent on the scale on which the survey was made. The scale for publication is now generally that of the original survey, except in the case of coast sheets which are sometimes reduced. It should not, therefore, be assumed that the original survey was made on a larger scale than that published.
- 50 It must be borne in mind that the principal method of ascertaining the inequality of the bottom of the sea is by the laborious process of sounding, and that in sounding over any area, the boat or vessel

obtaining the soundings is kept on given lines; that each time the lead descends, or a sonic sounding is taken, the depth over only a small area is obtained, in the case of the lead, it has a diameter of only a few inches, and that consequently each line of soundings, though miles in length, is only to be considered as representing a narrow width.

Surveys are not made on uniform scales, but each survey is made on a scale commensurate with its apparent importance. For instance, a general survey of a coast which vessels only pass in proceeding from one place to another is not usually made on a scale larger than one inch to the nautical mile, while surveys of areas where vessels are likely to anchor are made on a scale of three inches to the mile, and surveys of frequented ports or harbours likely to be used by fleets, on a scale of from six inches to ten inches to the nautical mile.

Close examination by sounding is the only method by which surveys on a large scale can be made, and in view of the vast mileage of surveys yet requiring completion in the interests of navigation, it would be a waste of time to undertake large-scale coast surveys.

The scale on which a survey is to be conducted having been settled, it is manifestly superfluous to obtain more lines of soundings than can be represented on the paper. 100 soundings, which is the maximum number that can be placed with clearness on every square inch of paper, means that on a scale of one inch to the mile each sounding on the chart occupies an area representing eight acres of actual ground, whilst on a scale of six inches to the mile each sounding represents an area of a little less than a quarter of an acre, i.e., of 100 feet square.

The following diagram represents as many soundings as can be placed legibly on a square inch of paper :—

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 16 | 15 | 15 | 13 | 13 | 14 | 12 | 11 | 10 | 9 |
| 14 | 15 | 14 | 14 | 13 | 13 | 12 | 11 | 9 | 8 |
| 15 | 15 | 14 | 17 | 16 | 14 | 13 | 10 | 10 | 9 |
| 16 | 16 | 17 | 18 | 16 | 12 | 11 | 8 | 9 | 10 |
| 18 | 17 | 15 | 12 | 9 | 7 | 7 | 7 | 9 | 10 |
| 19 | 16 | 12 | 9 | 5 | 4 | 5 | 6 | 8 | 9 |
| 22 | 19 | 16 | 10 | 3 | 5 | 6 | 7 | 8 | 10 |
| 20 | 16 | 12 | 7 | 5 | 6 | 6 | 7 | 8 | 10 |
| 18 | 15 | 11 | 9 | 7 | 7 | 7 | 8 | 10 | 11 |
| 20 | 17 | 14 | 11 | 12 | 10 | 9 | 10 | 11 | 13 |

Little assistance in detecting excrescences on the bottom is afforded by the eye, when sounding in a boat, even in clear water, on account of the observer being within five feet of the surface; none in turbid seas. If, therefore, there is no inequality in the soundings to cause suspicion, a shoal patch between two lines may escape detection.

Thus, in a chart on a scale of one inch to the mile, an inequality of some acres in extent rising close to the surface, if it happened to be situated between two lines, might escape detection; whilst in a chart on a scale of 6 inches, inequalities as large as battleships, if lying parallel with, and between the lines of soundings, might exist without detection if they rose abruptly from an otherwise even bottom.

General coast charts should not, therefore, be looked upon as infallible, and a rocky shore should on no account be approached within the ten-fathom contour line, without taking every precaution to avoid a possible danger; and even with surveys of harbours on a scale of 6 inches to the mile vessels should avoid, if possible,

passing over charted inequalities in the ground, as some isolated rocks are so sharp that the lead may not find the highest part. Better results can, however, be obtained by sonic sounding owing to the rapidity with which such soundings can be taken, but even
5 this method will not find rocks unless the boat or vessel be directly over them.

Blank spaces among soundings mean that no soundings have been obtained in these spots. When the surrounding soundings are deep it may with fairness be assumed that in the blanks the water
10 is also deep; but when they are shallow, or it can be seen from the rest of the chart that reefs or banks are present, such blanks should be regarded with suspicion.

Soundings in hair line, which are shown on the latest charts in upright figures, and on other charts in sloping figures, indicate that
15 such soundings have been taken from smaller scale charts, an unreliable source, or adapted from old and imperfect surveys.

(2) **Fathom lines a caution.**—Except in plans of harbours that have been surveyed in detail, the six-fathom line on most Admiralty charts is to be considered as a caution or danger line against unneces-
20 sarily approaching the shore or bank within that line, on account of the possibility of the existence of undiscovered inequalities of the bottom, which nothing but an elaborate detailed survey could reveal. In general surveys of coasts or of little frequented anchorages, the necessities of navigation do not demand the great expenditure of time
25 required for such a detailed survey. It is not contemplated that ships will approach the shore in such localities without taking special precautions.

The ten-fathom line is, on rocky shores, as before mentioned, another warning, especially for ships of deep draught.

30 Charts on which no fathom lines are marked must be especially regarded with caution, as it generally means that soundings were too scanty and the bottom too uneven to enable them to be drawn with accuracy.

Isolated soundings, shoaler than surrounding depths, should always
35 be avoided as there is no knowing how closely the spot may have been examined.

(3) **Chart on largest scale always to be used.**—It sometimes happens that from press of work, only the copper plate of the larger scale chart of a particular locality can at once receive any extensive
40 re-arrangement of coastline or sounding. This is an additional reason, besides the obvious one of the greater detail shown, why this largest scale chart should always be used for navigating.

(4) **Caution in using small-scale charts.**—In approaching the land or dangerous banks, regard must always be had to the scale of the
45 chart used. A small error in laying down a position means only yards on a large-scale chart, whereas on a small scale the same amount of displacement means large fractions of a mile.

For the same reason bearings to near objects should be used in preference to objects farther off, although the latter may be more
50 prominent, as a small error in bearing or in laying it down on the chart has a greater effect in misplacing the position the longer the line to be drawn.

(5) **Graduation.**—All plans are now being graduated in skeleton style before publication in order to facilitate easy reference to astro-
55 nomical positions; previously published plans are also graduated as opportunity offers. The graduation is, however, of necessity often

based upon imperfect information of a conflicting nature; for this reason, whenever an astronomical position is quoted other than approximate (i.e., when seconds are given), it is necessary to quote also the number of the particular chart from which the position has been derived.

5

In this connection it is pointed out that, whenever possible, a position should be transferred from one chart to another by bearing and distance from a distinguishing feature common to both, such as a point of land or a light, &c., and not by the graduation which may differ owing to one of the charts being constructed on later and more complete astronomical data than the other.

10

(6) **Distortion of printed charts.**—The paper on which charts are printed is, from various causes, subject to distortion, but the effect of this is seldom sufficient to affect navigation. It must not, however, be expected that accurate series of angles taken to different points will always exactly agree when carefully plotted upon the chart, especially if the lines are to objects at some distance. The larger the chart the greater the amount of this distortion.

15

(7) **Buoys.**—It is manifestly impossible that any reliance can be placed on buoys always maintaining their exact position. Buoys should, therefore, be regarded as warnings and not as infallible navigating marks, especially when in exposed positions; and a ship should always, when possible, be navigated by bearings of fixed objects on shore or angles between them, and not by buoys.

20

(8) **Light-buoys.**—The lights shown by light-buoys cannot be implicitly relied on, as, if occulting or flashing, the apparatus may get out of order, or the light may be altogether extinguished. These lights in the British isles are from 5 to 217 candle-power.

25

(9) **Cable-buoys.**—Cable-buoys marking the ends of submarine cables usually are spherical or can-shaped, surmounted by a globe and occasionally a flag. Below the topmark two *white fixed* lights, disposed horizontally, may be exhibited, but they cannot be implicitly relied on.

30

(10) **Lights.**—Arcs drawn on charts round a light are not intended to give information as to the distance at which it can be seen, but solely to indicate, in the case of lights which do not show the same characteristics or colours in all directions, the bearings between which the differences occur.

35

All the distances given in the Admiralty List of Lights and on the charts for the visibility of lights are calculated for a height of an observer's eye of 15 feet. The table of distances visible due to elevation, at the beginning of each volume of the Admiralty List of Lights, affords a means of ascertaining how much more or less the light is visible should the height of the eye be more or less. The glare of a powerful light is often seen far beyond the limit of visibility of the actual rays of the light, but this must not be confounded with the true range. Again, refraction may often cause a light to be seen farther than under ordinary circumstances.

45

When looking out for a light at night, the fact is often forgotten that from aloft the range of vision is much increased. By noting a star immediately over the light a very correct bearing may be afterwards obtained from the compass.

50

The intrinsic power of a light should always be considered when expecting to make it in thick weather. A weak light is easily obscured by haze, and no dependence can be placed on its being seen.

55

The power of a light can be estimated by remarking its candle

power, as given in the Admiralty List of Lights, and in some cases by noting how much its visibility in clear weather falls short of the range due to the elevation at which it is placed. Thus, a light standing 200 feet above the sea, and only recorded as visible at 10 miles in clear weather, is manifestly of little brilliancy, as its elevation would permit it to be seen over 20 miles, if of any power. (See table in the Admiralty List of Lights.)

The distance from a light cannot be estimated either by its brilliancy or its dimness.

- 10 On first making a light from the bridge, by at once lowering the eye several feet and noting whether the light is made to dip it may be determined whether the vessel is in the circle of visibility corresponding with the usual height of the eye or unexpectedly nearer the light.

(11) **Fog signals.**—Sound is conveyed in a very capricious way through the atmosphere. The following points in regard to fog signals should be borne in mind:—

- (a) Fog signals are heard at greatly varying distances.
- (b) Under certain conditions of atmosphere, when an air fog signal is a combination of high and low tones one of the notes may be inaudible.
- 20 (c) There are occasionally areas around a fog signal in which it is wholly inaudible.
- (d) A fog may exist a short distance from a station and not be observable from it, so that the signal may not be sounded.
- 25 (e) Some fog signals cannot be started at a moment's notice after signs of fog have been observed.

Mariners are therefore warned that fog signals cannot be implicitly relied upon, and that *the practice of sounding should never be neglected*. Particular attention should be given to placing "Look-out men" in positions in which the noises in the ship are least likely to interfere with the hearing of the sound of an air fog signal; as experience shows that, though such a signal may not be heard from the deck or bridge when the engines are moving, it may be heard when the ship is stopped, or from a quiet position. It may sometimes be heard from aloft though not on deck.

Great assistance may be obtained from radio beacons at many important lighthouses and light-vessels, but the attention of Mariners is called to the serious dangers which may arise from their misuse. No attempt should be made to approach such a position on a radio bearing, whilst relying only on hearing the sound fog signal in sufficient time to alter course to avoid danger. When the radio fog signal is transmitted from a light-vessel, it is essential in order to avoid collision, that the bearing from the light-vessel should not be kept constant.

(12) **Tides.**—In navigating coastal waters where the range of the tide is considerable, caution is always necessary. The tidal predictions for Standard ports in the Admiralty Tide Tables can generally be relied upon to give the times of high and low water to within a few minutes, and heights within a few tenths of a foot. Larger errors are to be expected in the predictions for places which are not Standard ports, computed from the data in Part II, but such predictions computed from the harmonic constants are always sufficiently accurate for the general requirements of navigation. For Standard ports the heights of the tide at times between high and low water may usually be found within narrow limits in accordance with the instructions in Parts I and III of the Tide Tables.

The datums of Admiralty charts depending on Admiralty surveys

vary with the type of tide, but usually conform with the International agreement, that datum should be "a plane so low that the tide will but seldom fall below it." The datums used by different nations, however, differ very considerably and those of Admiralty charts depending on foreign surveys are always those used by the original surveyors, which vary from "lowest possible low water" to "mean low water" in tidal waters, and are usually mean sea level in non-tidal waters. 5

The datum used is always stated on large-scale Admiralty charts.

Caution.—Most datums are above the lowest level to which the tide may fall; the charts therefore do not always show minimum depths. 10

(13) **Tidal streams.**—Where the tidal streams are semi-diurnal information regarding them is usually given, in a convenient part of the chart, in tabular form or by notes, special symbols being inserted at the positions to which the information refers. In certain cases, where the information available is incomplete, the streams are indicated by means of arrows. 15

There are many places where the tidal streams cannot be predicted by reference to the tide at a Standard port. Although no data for predicting the times at which they flow is given, their general direction is, in many cases, indicated by arrows on the charts. For a few of the straits and channels, where these conditions exist, tidal stream predictions are given in Admiralty Tide Tables. 20

Tidal streams, particularly if rotary, may vary considerably both in direction and rate; predictions of the stream must therefore always be considered approximate. 25

The turn of the tidal stream is not usually coincident with the times of high and low water; in fact, though in estuaries, harbour entrances, &c., the stream usually turns at about the times of high and low water, in open channels, and along open coasts generally, the turn usually occurs more nearly at half-tide. Predictions of the times of high and low water must therefore never be used as predictions of the times of slack water. 30

It should be remembered that, even where the general direction of the stream is parallel with the shore, an indraught is usually experienced when crossing the entrances to bays and inlets. 35

(14) **Fixing positions.**—For further information on this subject, see Admiralty Manual of Navigation.

When in sight of land, every opportunity should be taken of fixing the ship's position by terrestrial objects. 40

(a) *Simultaneous bearings or angles.*—The most usual method is by compass bearings of suitable objects, and it must be borne in mind that a fix by only two bearings is liable to error, either an absolute error in taking the bearings, or those made in applying the deviation or in laying the bearings off on the chart. For these reasons, a third or check bearing of some other object should, when possible, be taken, especially when near the shore or dangers. The coincidence of the resulting three lines will prevent any mistakes if the objects are suitably placed. 45

The position may also be fixed by observing horizontal sextant angles of well-defined suitably placed objects. These angles may be plotted on the chart with a station-pointer. Two conditions are, however, necessary to its successful employment; first, that the objects be well chosen; and, second, that the observer is skilful and rapid in his use of the sextant and station-pointer. For the former, 55 reference can be made to the pamphlet on the use of the station-pointer,

or to the Admiralty Manual of Navigation ; the latter is only to be obtained by practice.

It will readily be seen that a sextant often offers advantages, as angles can be obtained from any position whence the objects are visible, and the fix is in no way dependent on the compass.

In many narrow waters also, where the objects may yet be at some distance, as in coral harbours or narrow passages among mud banks, navigation by sextant and station-pointer is invaluable, as a true position can only be obtained by its means. A small error in either taking or plotting a bearing under such circumstances may put the ship ashore.

In all cases where great accuracy of position is required, such as the fixing of a rock or shoal, or the addition to a chart of fresh soundings or new buildings, angles should invariably be used. In such cases angles should be taken of a number of objects, five being a good number, since this not only fixes the position beyond doubt, but also affords a useful check on the accuracy of the chart itself. When running a line of soundings it is only necessary to take a third angle every now and then, firstly to make certain that the more important soundings, as at the end of a line, are correctly placed, and secondly to check the general accuracy of the chart.

Sometimes when only one of the selected objects is visible from the compass, a compass bearing of it and a sextant angle to the other may be used to fix the position.

(b) *Simultaneous bearing and distance.*—Attention is also directed to the very useful and handy method of fixing by the bearing and distance of a suitable object.

Should the ship be supplied with ranging equipment, its use here is obvious, but without it a very good approximate distance of an object of known height may be obtained by observing its angle of elevation and obtaining its distance from Lecky's Offshore Distance Tables, which are supplied with all sets of charts. Full directions for the use of these Tables are given with them.

(c) *The running fix.*—If two position lines are obtained at different times the position of the ship may be found by transferring the first position line up to the time of taking the bearing for the second position line. The point of intersection of the second and the transferred position line is the ship's position at the time of the second observation.

The accuracy of this fix will depend on the accuracy of the estimated run (over the ground) between bearings and, therefore, it is essential to take great care that an accurate allowance is made for tidal stream, current, and leeway experienced by the ship during this interval.

The method of fixing by doubling the angle on the bow is useful when passing points of land, &c., in waters where there is either no tidal stream or current, or where this can be estimated with sufficient accuracy.

This method is as follows :—

Suppose that the angle between the ship's head and an object is measured, and found to be X° , and that the time of the observation is noted. Suppose also that the time is again taken when the angle between the ship's head and the object is $2X^\circ$. Then, if the course made good is the course steered, the distance of the ship from the object at the time the second bearing was taken is equal to the run (over the ground) in the interval. Hence the ship's position can at once be laid off as a bearing and distance from the object. In practice the angle X should not be less than about 25° .

The most usual form of this method, the so-called "four-point"

bearing, gives a good fix for a departure, but does not ensure safety, as the point and any dangers that may lie off are abeam before the position is obtained.

The above fix is reliable when there is no tidal stream or current or when it runs directly with or against the course of the ship. When the stream or current runs across the course of the ship or when leeway is to be allowed for, this method should never be used and the ship's position should be obtained by plotting the two bearings as a running fix.

A table "Distance of an object by two bearings" is supplied with certain chart folios, and is also given in Inman's Tables, by which the ship's position at the second bearing can be found: any two bearings at a suitable angle to each other may be used, together with the run between them, but, again, this table should not be used when the vessel is subject to a cross tidal stream or leeway.

(d) *The danger angle.*—The use of the danger angle in passing outlying dangers with land behind them should also not be forgotten.

A vertical danger angle is useful when the danger lies off an object such as a lighthouse, the height of which is known; the angle being obtained from the aforesaid Lecky's Tables. If a horizontal danger angle between two objects is used, however, caution is necessary, as, should the objects not be correctly placed on the chart, the angle taken from it may not serve the purpose. This method should not, therefore, be employed when the survey is old or manifestly imperfect.

(e) *The astronomical position line.*—When fixing by astronomical observations, attention is drawn to the great utility of the position line. Even a single position line may at times give invaluable information, as the ship must be somewhere on this line, provided that the chronometer error is accurately known.

A sounding obtained at the same time may often serve to give an approximate position. Again, by steering along, or at a required distance parallel to, a single position line, a vessel may make her port or avoid a danger, although uncertain of her position.

A very accurate position may be obtained by observations of three or more stars at evening or morning twilight, or by the observation of a bright star at daybreak and another shortly afterwards of the sun when a few degrees (not less than 10°) above the horizon. The position lines obtained from the bodies observed should differ in azimuth by 30° or more.

Mariners are also reminded that, with modern tables for correcting the altitude, observations of the moon entail practically no more calculation than those of a planet. Moon sights are sometimes available when stars are obscured by light cloud, &c.; also, an excellent position may frequently be obtained by simultaneous observations of the sun and moon.

(f) *The radio position line.*—A number of radio systems of which the principal ones are M/F D/F, Radio Beacons, Consol Beacons, Loran, Gee and Decca, are now in general use from which position lines or fixes may be obtained.

The accuracy and range which may be obtained from these systems vary considerably; their great advantage over other methods lies in the fact that they can be employed under all weather and visibility conditions, though in some cases the results obtained will vary between day and night.

Special receiving equipment is generally required in order to make

use of the radio signal, and some systems require special lattice charts or tables for plotting the position lines. Full details of these systems and their coverage areas are contained in Admiralty List of Radio Signals, Volume II.

5 The mariner should appreciate that with the position-fixing systems the accuracy of a fix will depend on three factors :—

(i) The distance of the observer from the transmitters.

(ii) The bearing of the observer from the base line joining the pair of stations which he is using.

10 (iii) The angle of intersection of the hyperbolic position lines.

It should be apparent from the inspection of any lattice chart that an inherent small equipment error, or a small personal error that may occur at the receiver, will cause a geographical error of varying amount according to the observer's position.

15 It is important to realise that accurate equipment is no guard against the vagaries of the propagation of radio waves. The beacons and systems operating on medium and low frequencies are liable to "night error" in areas where the ground and sky waves are received with equal strength; these areas will occur at ranges depending upon the particular frequency used by any beacon or system. Where the transmissions of two stations are synchronised to provide one signal reading and position line, "night error" will be a minimum along the normal to the base line joining the pair of stations, and a maximum towards the limits of their service sector.

25 Little is yet known about the effects of hills and discontinuities in the terrain (such as cliffs) on the speed of medium- and low-frequency radio waves.

At the other end of the radio spectrum the transmissions of systems operating on the very high frequencies are subject to distortion in abnormal atmospheric conditions.

30 (g) *Fixing by radar*.—Radar may also be of considerable assistance when navigating in coastal waters in low visibility or at night. It is essential, however, to appreciate the limitations of a radar set when interpreting the information obtained from it. It must be remembered that the radar horizon is only slightly farther than the visual horizon would be, in good visibility, for a height of eye equal to the height of the radar aerial. Hence no echoes will be received from a coastline lying below the radar horizon, while echoes may be received from high ground farther inland which will give a misleading impression of the range of the nearest land.

40 Depending on the width of its beam, the bearings from a radar set tend to be inaccurate. It is therefore preferable when fixing by radar to use ranges rather than bearings. It is then most important to consider carefully the identity of the object giving the echo, using the bearing as an indication, and the height of the object to determine whether it will appear on the radar presentation. Radar Range Nomograms are useful in deciding this, but a satisfactory result can be obtained by using "Distance to Sea Horizon Tables."

50 When two or more objects on the radar presentation have been selected and positively identified, a satisfactory fix can be obtained by striking arcs on the chart with the radar range of the selected objects. These arcs intercept at the ship's position. Best results will be obtained by using isolated objects such as detached lighthouses, rocky islets, and the extremities of long piers or jetties, but where no such objects are available a steep coastline with cliffs should be used. Flat or gently shelving coastlines, such as mud flats or sand dunes,

should not be used since it is difficult to identify any portion of them on the radar presentation. Identification is assisted in some areas by fitting objects, such as buoys and beacons, with radar reflectors, causing them to return strong echoes. Attention is drawn to the symbols with which such objects are marked on Admiralty Charts, and which are given in the latest edition of Chart No. 5011, "Explanation of signs and abbreviations used on Admiralty Charts." 5

The difficulty of positive identification of objects is largely reduced if a Chart Comparison Unit is used in conjunction with the navigational radar. Fixes obtained with this equipment employ, in principle, an infinite number of ranges of the terrain in the vicinity of the ship, and in so doing a satisfactory fix will normally be assured. 10

In addition, radar beacons are available in some areas. Details of these and their use are given in the Admiralty List of Radio Signals, Volume II. 15

(15) **Observations for errors of the compass.**—No opportunity should be neglected for checking the error of the compass. When coasting, and a well-surveyed and fairly large-scale chart is available, an excellent method of observing the error is by taking the compass bearing of two suitable objects when in transit, and comparing this with the charted bearing; there should be sufficient distance between the objects to provide a sensitive transit. When this method is not available the error should be obtained by azimuths of a heavenly body. Errors should be observed on any change of course on which the ship is steadied for a reasonable time, and at least twice a day when steering a steady course for long periods. 20 25

(16) **Change of variation of the compass.**—The gradual change in the variation must not be forgotten in laying down positions by bearing on charts. The magnetic compasses placed on the charts for the purpose of facilitating plotting become in time slightly in error, and in some cases, such as with small scales, or when the lines are long, the displacement of position from neglect of this change may be of importance. The compasses are re-engraved when the error amounts to a degree, but the chart plates cannot be corrected more frequently from the impossibility of making alterations often on one spot in a copper plate. 30 35

The geographical change in the variation is in some parts of the world sufficiently rapid to need consideration. For instance, in approaching Halifax from Newfoundland the variation changes 10° in less than 500 miles, and in the English channel about 5° in 400 miles. The Variation chart should be consulted on this head. 40

On certain general charts embracing large areas with considerable change of variation, true compasses are placed instead of magnetic compasses, the variation being shown by *isogonic lines* (curves of equal magnetic variation), in a similar manner to the Variation chart. One or two *isogonic lines* are also sometimes placed on charts, in addition to the magnetic compasses, in order to indicate the general direction of these curves, and thus facilitate the determination of the variation to be employed in portions of the chart not in immediate proximity to any one of the engraved compasses. Magnetic variation values shown on Admiralty charts are for the 1st July of the year mentioned. 45 50

(17) **Local magnetic disturbance of the compass on board ship.**—The term "local magnetic disturbance" has reference only to the effects on the compass of magnetic masses external to the ship which it is placed. Observation shows that such disturbance of the 55

compass in a ship afloat is experienced only in a few places on the globe. Magnetic laws do not permit of the supposition that it is the visible land which causes such disturbance, because the effect of a magnetic force diminishes in such a rapid proportion as the distance
5 from it increases that it would require a local centre of magnetic force of an amount absolutely unknown to affect a compass half a mile distant.

Such deflections of the compass are due to magnetic ores in the bed of the sea under the ship, and when the water is shallow, and the force strong, the compass may be temporarily deflected when
10 passing over such a spot, but the area of disturbance will be small, unless there are many centres near together. Such areas are depicted by a special symbol on charts, and the cause of the magnetic disturbance is referred to as a Local Magnetic Anomaly.

They may also be due to wrecks lying on the bottom in moderate
15 depths, but investigations have proved that, while deflections of unpredictable amount may be expected when very close to such wrecks, it is unlikely that deflections in excess of 7° will be experienced, nor should the disturbance be felt beyond a distance of 250 yards.

It is very desirable that whenever a ship passes over an area of
20 local magnetic disturbance, the position should be fixed, and the facts reported as far as they can be ascertained.

(18) Use of oil for modifying the effect of breaking waves.—

Many experiences of late years have shown that the utility of oil for this purpose is undoubted, and the application simple.

25 The following may serve for the guidance of seamen, whose attention is called to the fact that a very small quantity of oil, skilfully applied, may prevent much damage both to ships (especially the smaller classes) and to boats, by modifying the action of breaking seas.

The principal facts as to the use of oil are as follows:—

30 1. On free waves, i.e., waves in deep water, the effect is greatest.
2. In a surf, or waves breaking on a bar, where a mass of liquid is in actual motion in shallow water, the effect of the oil is uncertain, as nothing can prevent the larger waves from breaking under such circumstances; but even here it is of some service.

35 3. The heaviest and thickest oils are most effectual. Refined kerosene is of little use; crude petroleum is serviceable when nothing else is obtainable; but all animal and vegetable oils, such as waste oil from the engines, have great effect.

4. A small quantity of oil suffices, if applied in such a manner
40 as to spread to windward.

5. It is useful in a ship or boat, both when running, or lying to, or in wearing.

6. No experiences are related of its use when hoisting a boat up in a sea-way at sea, but it is highly probable that much time and
45 injury to the boat would be saved by its application on such occasions.

At anchor, when the sea is sufficient to render it difficult to hoist up or in boats, oil bags from forward or from the swinging booms have been found to render the sea alongside comparatively smooth.

7. In cold water, the oil, being thickened by the lower temperature,
50 and not being able to spread freely, will have its effect much reduced. This will vary with the description of oil used.

8. The best method of application in a ship at sea appears to be: hanging over the side, in such a manner as to be in the water, small
55 canvas bags, capable of holding from one to two gallons of oil, such bags being pricked with a sail needle to facilitate leakage of the oil.

The position of these bags should vary with the circumstances.

Running before the wind they should be hung on either bow and allowed to tow in the water.

With the wind on the quarter the effect seems to be less than in any other position, as the oil goes astern while the waves come up on the quarter.

Lying to, the weather bow and another position farther aft seem the best places from which to hang the bags, with a sufficient length of line to permit them to draw to windward, while the ship drifts.

9. Crossing a bar with a flood tide, oil poured overboard and allowed to float in ahead of the boat, which would follow with a bag towing astern, would appear to be the best plan. As before remarked, under these circumstances the effect cannot be so much trusted.

On a bar with the ebb tide it would seem to be useless to try oil for the purpose of entering.

10. For boarding a wreck, it is recommended to pour oil overboard to windward of her before going alongside. The effect in this case must greatly depend upon the set of the current, and the depth of the water.

11. For a boat riding in bad weather from a sea anchor, it is recommended to fasten the bag to an endless line rove through a block on the sea anchor, by which means the oil is diffused well ahead of the boat, and the bag can be readily hauled on board for refilling if necessary.

12. Towing a vessel in a heavy sea, oil is of the greatest service, and may prevent parting the hawser. Distribute from the towing vessel forward and on both sides; if used only aft the tow alone gets the benefit.

(19) **Mirage and abnormal refraction.**—An unusual lapse rate of temperature (and therefore density as well) with height immediately above the sea (or land) surface produces a distortion in the appearance of objects near the horizon; such a phenomenon is known as mirage.

When the surface is relatively cold (and the wind very light) so that the density of the air decreases rapidly for a short distance above the surface, light rays from objects low down near the horizon are bent down, the same way in fact as are usually the rays of the sun when entering the earth's atmosphere at a low altitude. The effect is to render visible objects that are normally below the horizon, e.g., lights may be "raised" at night at much greater distances than one would ordinarily expect. This phenomenon is known as "looming."

A further occasional effect produced when the air is appreciably warmer than the sea, is "superior mirage" in which an inverted image is seen over the real object; sometimes an erect image is seen immediately above and touching the inverted one. The object and its images in this instance are well defined in contrast to the shimmering object and image of the inferior mirage. Superior mirage is most often experienced in high latitudes and wherever the sea surface temperature is abnormally low.

"Inferior mirage," the effect of which is to decrease the distance at which objects are visible in a horizontal direction, is due to a rapid increase of density with height close to the surface such as occurs when air of comparatively low temperature blows over a warmer sea, or over a tarred road or desert when a hot sun is beating down on it. In either event light rays are bent up when approaching the surface where the density of the air is much less than above. The coastline, and at times a ship or island, may appear to be floating in air above a shimmering horizon, possibly with, in the former instance, her hull

either invisible or with an inverted image underneath. Inferior mirage is comparatively uncommon at sea and is more likely to be observed along a coastline than well out to sea.

When mirage is evident caution must be used in taking sights with a sextant, for abnormal refraction must necessarily be present also. With inferior mirage better, but not normal, results will usually be obtained by ascending as high as possible in the ship; with superior mirage the height of eye should be as low as possible. It is, however, advisable, whenever abnormal refraction is suspected, to measure the elevation of the celestial body above the back as well as the front horizon as explained in navigational text-books.

(20) **Aurora.**—The most common form of aurora is an arc system, single or multiple, narrow and well defined, or broad and diffuse, and centred on the magnetic meridian.

The most usual colour is pale whitish green when the auroral activity is weak and diffuse: but when the aurora arises high towards the zenith in the form of rays, rayed curtains and draperies with much rapid movement of the constituent rays, the colours sometimes become much stronger and more vivid, and include bright green, red and violet.

When the curtains forming the aurora converge to form a corona, which may rotate very rapidly about the point of convergence, the displays may become very complex, filling practically the whole sky, and extending far to the equatorial side of the zenith with much rapid movement and change of colour from instant to instant.

Though the most usual duration of auroral displays in these high latitudes is several hours, they not infrequently last throughout the whole night from dusk to dawn. In such long displays the really intense and violently active periods with vivid strong colours are generally confined to spasms of 15–30 minutes, with the intervening periods filled with diffuse glows or quiet arc systems.

The absolute intensity of the light of the aurora is seldom great, and the brighter stars usually glimmer through it. In the most vivid and intense displays, the light may equal, but rarely surpasses, that of the full moon in a cloudless sky. It may give enough light to read by. On such occasions the aurora may be visible to some extent in partial twilight.

Though in high latitudes aurora occurs any time in the dark hours it is probably most frequent in the late evening hours from 9 p.m. till midnight or just after; it is more frequent in the equinoctial months than at other times and has a well-defined 11-year period of activity following the cycle of solar activity. A maximum of activity occurred in 1948, and the interval from maximum to minimum activity usually occupies a period of about 6 to 7 years. In high latitudes this cycle of activity is reflected more in the intensity and vividness of the displays than in their frequency of occurrence. Though really outstanding displays tend to occur around the years of maximum activity they may occur at any time of the cycle, except perhaps near the absolute minimum.

In addition to this 11-year cycle of activity active periods tend to recur at intervals of 27 days, see Magnetic Storms.

Northern hemisphere.—Aurora Borealis occurs most frequently along a zone which forms an approximate oval, of average radius 23° , with centre in the extreme north-west of Greenland. This zone of maximum frequency crosses Hudson Bay and the Labrador coast in about lat. 58° N. It runs south of Cape Farewell and along the south coast of Iceland. It lies just north of North Cape, touches the extreme north

of Novaya Zemlya, skirts Cape Chelyuskin and then eastward just north of Wrangel Island into the north of Alaska. Along this zone aurora of some kind can probably be seen every suitable night when the sky is clear; 250 miles outside this maximum zone to the southward the auroral frequency decreases sharply to about 70–100 nights a year on the average, and to 20–25 nights 500 miles south of the maximum zone. Inside the maximum zone the geographical distribution of frequency is not so well established but it probably falls off more gradually than it does outside. 5

On the zone of maximum frequency itself aurora appears as frequently to the south of the zenith as to the north, but with increasing distance outside the zone the appearances concentrate more into the northern sky; the reverse is true inside the zone. 10

Southern hemisphere.—The frequency and distribution of Aurora Australis is not fully known. It is probable that it is more frequently seen at sea between about long. 50° E. and 175° W. than in other longitudes. Very fine displays have occasionally been seen in Australasia and on passages across the Southern Ocean. There is nevertheless a general impression that aurora is less frequent in the southern than in the northern hemisphere. This is probably to be accounted for by the fact that, apart from whaling and exploring expeditions, ships' tracks in general do not extend to such high latitudes as in the northern hemisphere. 15 20

The zone of maximum auroral frequency is roughly annular and is near the circumference of a circle of radius about 1,080 miles, centred in about lat. 75° S., long. 129° E. The frequency falls off both outside and inside this zone. A large part of the zone is within the continent of Antarctica. 25

(21) **Magnetic storms.**—Magnetic storms vary in intensity and frequency with the sunspot cycle, similarly to aurorae. An intense magnetic storm is always accompanied by a bright and active aurora. The deeply coloured aurorae, showing more pronounced red and green, and sometimes also blue and violet, tints, are invariably connected with magnetic storms of considerable or great intensity. Such a storm will produce simultaneous aurora in both hemispheres. In the greatest storms aurorae in some form may be visible down to about 20° north latitude in certain parts of the oceans, especially between the meridians of 30° W. and 140° W. Magnetic storms vary greatly in duration from a few minutes to several days; they are generally more intense during the hours of darkness. Long-continued storms usually show great fluctuations with periods of complete or partial quiescence. Similarly the associated aurora fluctuates between active and quiescent forms. 30 35 40

The origin of magnetic storms and aurorae is not yet fully understood, but they are intimately connected with the state of a local area of the sun. As the same part of the sun is again presented to the earth after an interval of about 27 days, a magnetic storm and aurora may recur at this time, usually in less intense form. 45

A ship's compass may tend to deviate during the progress of a considerable magnetic storm. In more intense storms the compass needle may oscillate 1° or more either side of its normal position. Such oscillation may persist for as long as 10 or 20 minutes before dying out. Further oscillation may occur after a period of quiescence. Deviations of 2° or more are rare, but during the great magnetic storm and aurora of January 25th, 1938, one of 4° to the eastward was observed off the Portuguese coast. During a severe magnetic 50 55

storm the compass may be deflected continually in one direction to the extent of about half a degree for some hours. When bright aurora is seen, especially if it is of the more deeply coloured and rapidly moving kind, and particularly when it is observed in low latitudes, the possibility of deflections of the compass should always be borne in mind.

During a considerable magnetic storm freak wireless reception may occur on certain waves and short-wave transmission may fade to complete silence. Beam radio communication, especially in a west-east or east-west direction, may be interrupted. Such conditions may last in some degree over a period of several days, at times when the sun is unusually active. Short-wave fading also occurs occasionally from a different form of solar disturbance known as a "bright eruption," when this is very intense. On the average such fading begins about 7 minutes after occurrence of the bright eruption and may last 5 or 10 minutes, gradually returning to normal within a period of 40 to 45 minutes. These fadings are confined to the daylight hemisphere of the earth, while the magnetic storm fadings may occur by day or by night.

GENERAL METEOROLOGY.

(All the following articles do not apply to every Pilot, but articles applicable to this Pilot will be referred to in the Climate and Weather Section in Chapter I.)

(1) **Lows.**—A low, or depression, appears on a synoptic chart as a series of isobars roughly circular or oval in shape, surrounding an area of low pressure. It is a main feature of the weather at sea in middle latitudes where it is responsible for most of the occasions of strong winds and unsettled weather, though not all depressions are accompanied by strong winds.

Lows vary very much in size and depth ; one may be only a hundred miles in diameter and another over two thousand miles ; some are deeper than others, a deep low being one in which the pressure is very much lower near the centre than on the outside whereas, on the other hand, a shallow depression is one where the pressure, although low near the centre, is not very much lower than in the surrounding districts.

Note.—The bracketed equivalents hereunder refer to the Southern Hemisphere.

In the northern (southern) hemisphere the winds blow round an area of low pressure in an anti-clockwise (clockwise) direction ; there is also a slight inclination across the isobars towards the lower pressure. Thus the well-known rule for the northern (southern) hemisphere is that when an observer faces the wind the direction of the lowest pressure is from 8 to 12 points to his right (left). The strength of the wind is in all instances closely related to the steepness of the barometric gradient or distance apart of the isobars ; the closer the isobars the stronger the wind.

Lows may move in almost any direction, though most often towards north-east (south-east) or east, at a speed of anything between 10 and 40 knots, though occasionally as much as 60, during the middle and most active stage of their existence ; they slow down when filling up (see "occlusion" below). The life of a low is in the region of 4 to 6 days.

There are usually one or more fronts, probably radiating from the centre, in the area covered by a low ; each front on a synoptic chart represents a belt of relatively bad weather, accompanied by a veer (backing) of wind, which marks the change from the weather characteristic of one air mass to that of another. During the first two or three days of its life a low has a warm and a cold front, the area between the two being known as a warm sector because the air has come from a warmer locality than that which is outside the sector (*see* Fig. 1*a*). Warm air is lighter than cold air and it rises over the cold air ahead of the warm front as shown in Fig. 1*b* ; this causes condensation of the water vapour in the warm air, forming at first cloud and later drizzle or continuous steady rain. The cloud spreads out ahead of the warm front, and the highest cloud, cirrus or mares' tails, is often about 500 miles ahead. At the rear boundary of the warm sector, known as the "cold front," the cold air is pushing under the warm air forcing the latter to ascend rapidly ; this process is sometimes violent enough to produce squalls. The rapid ascent of the warm air causes the moisture to condense in the form of cumulo-nimbus clouds (shower clouds), from which heavy showers may fall. The cold front gradually overtakes the warm front so that the warm sector is eventually lifted up from the earth's surface. When this has occurred the low is said to be occluded, and the warm and cold fronts have merged into the third type of front known as an "occlusion" (*see* Figs. 2*a* and *b*). When a low has become occluded, it usually decreases in intensity and rate of travel, and gradually fills up. On the other hand, a low which has a marked warm sector is likely to be deepening, the winds associated with it may increase in force and its rate of travel may increase. Lows are usually travelling in a direction approximately parallel to the isobars (and in the direction of the wind) in the warm sector.

The approach of a low is indicated by a falling barometer. In the northern (southern) hemisphere, if the low is approaching from westward and passing northward (southward) of the ship, clouds appear on the western horizon, the wind shifts to a south-westerly (north-westerly) or southerly (northerly) direction and freshens, the cloud layer gradually lowers, and finally drizzle, rain or snow begins. If the low is not occluded, after a period of continuous rain or snow there is a veer (backing) of wind at the warm front, a rise of temperature and diminution or cessation of rain (or snow) in the warm sector, the visibility being usually moderate and the sky overcast with low cloud. The passage of the cold front is marked by the approach from westward of a thick bank of cloud (which however cannot often be seen because of the customary low overcast sky in the warm sector), a further veer (backing) of wind to west or north-west (south-west), sometimes with a sudden squall, rising pressure, a fall of temperature, squally showers of rain, hail or snow, and improved visibility (except during showers). The squally showery weather with a further veer (backing) of wind and drop in temperature may recur while the low recedes owing to the passage of another cold front or occlusion. If the low is occluded, the occlusion is preceded by the cloud of the warm front ; there may be a period of continuous rain mainly in front of and at the line of occlusion, or a shorter period of heavy rain mainly behind the occlusion, according as the air in front of the occlusion is colder or warmer than that behind it. There may be a sudden veer (backing) of wind at the occlusion.

Often another low follows 12 to 24 hours later, in which event the

barometer begins to fall again and the wind backs towards south-west (north-west), or even south (north).

If a low travelling eastward or north-eastward (south-eastward) is passing southward (northward) of the ship, the winds in front of it are easterly and they back (veer) through north-east (south-east) to north (south) or north-west (south-west); changes of direction are not likely to be so sudden as on the southern (northern) side of the low. In the rain area there is often a long period of continuous rain and unpleasant thick weather with low cloud. In winter in the colder regions the weather is cold and raw and precipitation is often in the form of snow.

Near the region of lowest pressure, lulls are sometimes experienced, but sudden changes are likely, and in a deep low the wind may increase in strength very rapidly, perhaps to gale force as the barometer begins to rise.

Sometimes in the air circulation of a large low, usually on the equatorial side and often on a cold front, a secondary depression develops, travelling in the same direction as the primary but usually more rapidly. The secondary often deepens while the original low decreases in intensity. In the region between the primary and the secondary depressions, the winds are not as a rule strong; but on the further side of the secondary, usually the southern (northern) side, winds are likely to be strong and they may reach gale force. Thus the development of a secondary may cause gales at a greater distance from the primary than anticipated, while there may be only light winds where gales were expected.

The above is a brief general description of lows and the associated weather in temperate or middle latitudes of the northern (southern) hemisphere. It must be emphasised, however, that individual lows in different localities differ considerably from one another, according to the characteristics (especially the temperature and humidity) of the air currents of which they are composed, and the nature of the surface over which they are travelling.

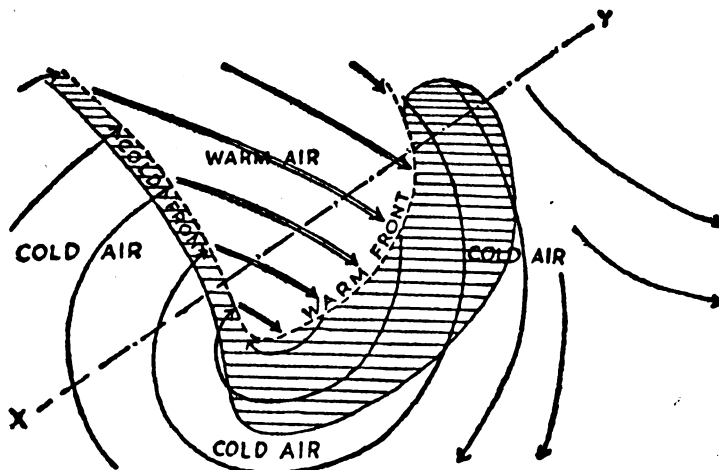
(2) Tropical revolving storms.—*Practical rules for avoiding them.*—These storms are so named because the wind blows round an area in which the lowest pressure is at the centre. The direction of rotation is anti-clockwise in the northern hemisphere and clockwise in the southern hemisphere. The wind does not revolve round the centre of low pressure in concentric circles but has a spiral movement inwards, towards the centre of the storm field.

A tropical storm is not so extensive as the depression of higher latitudes but, within 75 miles or so of the centre, the wind is often far more violent, and the high and confused seas near the centre may cause considerable damage to large and well-found ships, while small vessels (for example, destroyers) have foundered. The danger is still greater when ships are caught in restricted waters without adequate room to manœuvre. Within 5 to 10 miles of the centre the wind is light or moderate and variable, the sky is clear or partially so, and there is a heavy, sometimes mountainous, confused swell; this area is known as the "eye" of the storm. After passing through the relatively windless centre of the storm the wind will suddenly, and with great violence, commence to blow from a direction almost opposite to that experienced on the other side of the windless centre. Due to torrential rain and sheets of almost continuous spray, visibility near the storm centre (but outside the "eye") is almost nil.

Every ship navigating in an area subject to tropical storms during

SOUTHERN HEMISPHERE.

Fig. 1a.



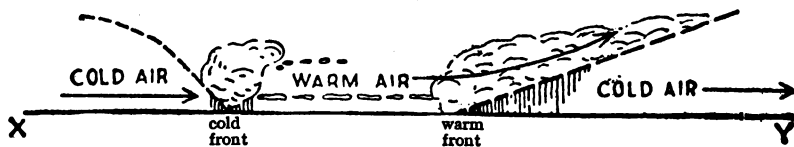
Plan of a developed depression.

The double lines show the flow of the warm air, and the single lines the flow of the cold air.

The shading shows the area where rain (or snow) is most probable.

Width of rain belt ahead of warm front is generally between 100 and 200 miles.

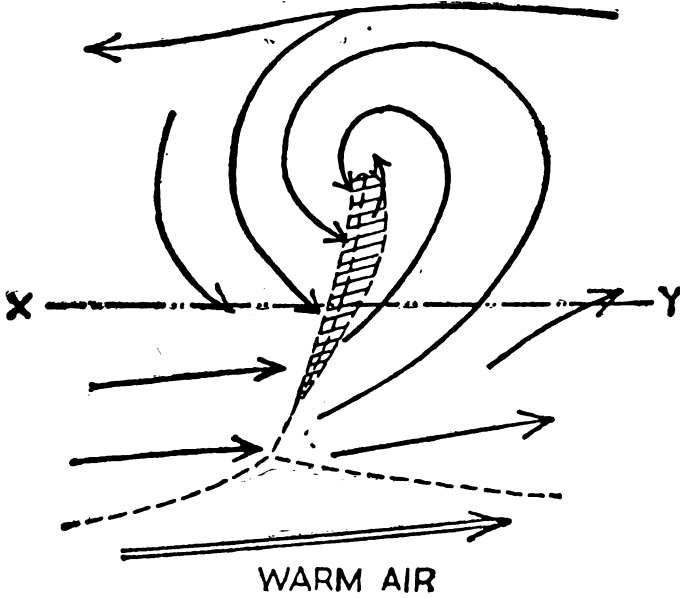
Fig. 1b.



Vertical section of the depression along the line XY.

[See over page.

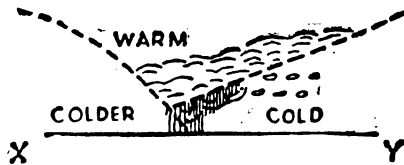
Fig. 2a.
COLD AIR



Plan of an occluded depression.

The shading shows the region where rain (or snow) may be expected near the occlusion.

Fig. 2b.

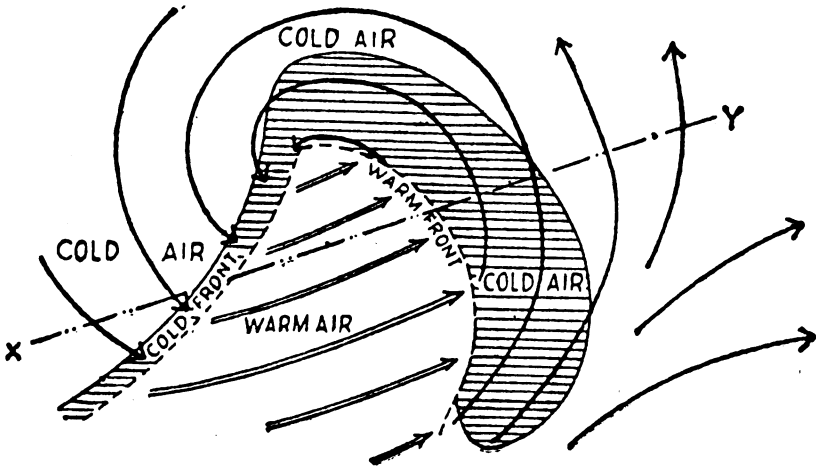


Vertical section of an occlusion of the cold front type.

The air in front of the occlusion is warmer than the air behind it.

NORTHERN HEMISPHERE.

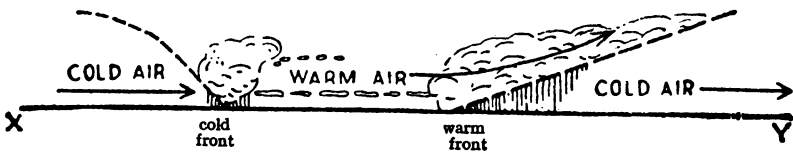
Fig. 1a.



Plan of a developed depression.

The double lines show the flow of the warm air, and the single lines the flow of the cold air.
 The shading shows the areas where rain (or snow) is most probable.
 Width of rain belt ahead of warm front is generally between 100 and 200 miles.

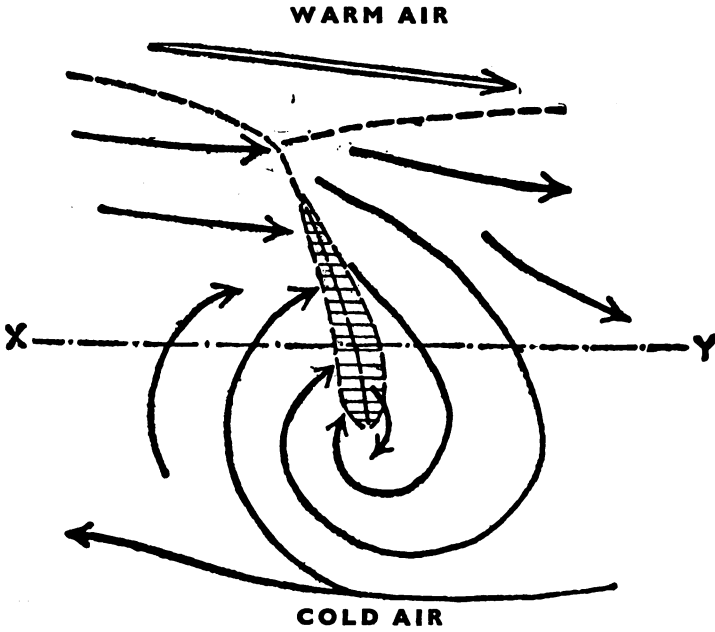
Fig. 1b.



Vertical section of the depression along the line XY.

[See over page.]

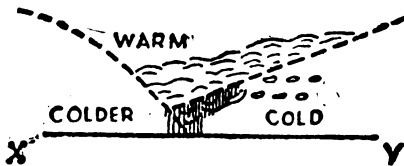
Fig. 2a.



Plan of an occluded depression.

The shading shows where rain (or snow) may be expected near the occlusion.

Fig. 2b.



Vertical section of an occlusion of the cold front type.

The air in front of the occlusion is warmer than the air behind it.

the season of their occurrence should be constantly on the alert for any sign of their approach, so that steps can be taken to avoid the danger zone while there is still time and sea-room.

Localities, season, and average frequency.—Tropical storms occur for the most part on the western side of the oceans, though they are also experienced in the Bay of Bengal, off the north-west coast of Australia, and off the west coast of Central America. They are unknown in the South Atlantic. They are given various names according to the part of the World in which they occur.

| | | |
|------------------------|----------------|----|
| Western North Atlantic | }hurricanes | 10 |
| Eastern North Pacific | | |
| South Pacific | | |
| Western North Pacific | -typhoons | |
| Indian Ocean | }cyclones | 15 |
| Bay of Bengal | | |
| Arabian Sea | | |
| North-west Australia | -willy-willies | |

They are most frequent during the late summer and early autumn of their hemisphere; they are comparatively rare in the southern hemisphere from mid-May to November, and in the northern hemisphere from mid-November to mid-June. In the Arabian Sea, however, storms are most likely to occur at the change of the monsoon, i.e., October–November, and May–June, though they average only one or two a year. Out-of-season storms occur from time to time, particularly in the western North Pacific where no month is entirely safe, and in the Indian Ocean where one is reported south of the Equator perhaps once in two years outside the usual season. The following table shows approximately the average number of severe tropical storms recorded per annum, from statistics taken over several years for the various areas:—

| | | |
|-------------------------|----|----|
| West Indies | 5 | 35 |
| Western North Pacific | 25 | |
| „ South Pacific | 3 | |
| Southern Indian Ocean | 6 | |
| Bay of Bengal | 2 | |
| Arabian Sea | 1 | |
| Eastern North Pacific | 3 | |
| West Coast of Australia | 1 | |

Variations in any one year amounting to 50% above or below the average are not unusual. Some of the figures quoted are probably an underestimate since in the less-frequented parts of the world many storms must escape detection.

Origin, movement and extent.—Tropical storms originate as a general rule in the doldrums, between the parallels of 7° and 15° of latitude; those which affect the western part of the Pacific, South Indian and North Atlantic Oceans are first reported in the western third of those oceans, though there are exceptions such as in the North Atlantic during August and September where an occasional storm is known to begin near the Cape Verde islands. In the northern hemisphere they move off in a direction between 275° and 350°, though most often within 30° of due west. When in a latitude of 25° or so they usually recurve away from the equator and, by the time they have reached the 30th parallel, the track (or path as it is more usually called) is north-easterly. In the southern hemisphere they move off in a WSW.

to SSW. direction (usually the former), recurve at about 15° to 20° S., and thereafter adopt a south-easterly path. In either hemisphere many storms do not recurve but continue in a west-north-westerly (or west-south-westerly) direction until they reach the mainland where they quickly die.

The speed of advance of these storms is usually about 10 knots in their early stages, increasing a little with latitude ; it seldom exceeds 15 knots before recurving, but after recurving 20 to 25 knots is usual though speeds of 40 knots or even more have been known.

Occasionally storms move erratically, the path turning towards the equator, or adopting an easterly component in a low latitude, or even making a complete loop, but on these occasions their speed of advance is low, usually less than 10 knots, while the unusual path is being followed.

The extent of the storm area varies considerably with individual storms but, generally speaking, winds of force 7 or more are improbable at more than 200 miles (especially on the equatorial side of the storm area) and force 8 is unlikely to be exceeded at more than 100 miles, from the storm centre, if in a latitude of less than 20° . Thereafter the radius increases with latitude so that these distances are nearly doubled on reaching the 35th parallel, but the intensity diminishes near the centre. Hurricane force winds are likely within 75 miles of the storm centre in the tropics, and gusts exceeding 150 knots have been reported in a few instances within 50 miles or so (except in the eye of the storm). The aim of the mariner should therefore be to remain as far as possible from the centre of the storm system.

Warning of existence or approach.—In most instances, warning of the position, intensity and probable movement of a storm is given by radio at frequent intervals by meteorological authorities ashore. (See Admiralty List of Radio Signals, Volume III.) Sometimes, however, there is insufficient evidence available for an accurate warning or even a general warning to be given and ships must then be guided by their own observations. Of the following indications of the proximity of a tropical storm, the first is by far the most reliable within 20° or so of the equator ; it should be borne in mind, however, that very little warning may be expected of the approach of an intense storm of unusually small diameter.

(a) If the corrected barometer reading is 3 mb. or more below the mean for the time of year, as shown in a climatic atlas or on the appropriate chartlets in the meteorological text of this Pilot, suspicion should be aroused and action taken to meet any development, such as raising steam in any available additional boilers, &c. It should be noted, however, that the barometer reading must be corrected not only for height, latitude, temperature and index error (if mercurial), or for height and index error if aneroid, but also for diurnal variation, the amount of which is given for each hour of the day in the Air Ministry climatic atlases and in the meteorological text of this Pilot. If the reading thus corrected is 5 mb. or more below normal, it is time to take avoiding action for there can be little doubt that a tropical storm is in the vicinity. According to an analysis of observations in the Western Pacific the centre of the storm is then probably not more than 200 miles away. At this distance, at any rate in the China Sea vicinity, the wind has usually increased to about force 6.

When proceeding through an area liable to be visited by these storms it is desirable to take hourly readings of the barometer.

(b) An appreciable change in the direction and/or strength of the wind.

(c) A swell is sometimes evident, proceeding from a direction that approximates to the bearing of the centre. If ahead of the storm this indication may be apparent before the barometer begins to fall. 5

(d) Extensive cirrus cloud followed, as the storm becomes closer, by much alto-stratus cloud and subsequently fracto-cumulus or "scud."

(e) In addition there is the warning that can be given by Radar. The existence of moderate or heavy rain can usually, under favourable meteorological conditions, be detected at the extreme range of centrimetric radar, such as is normally used for navigational purposes afloat, depending on the vertical extent of the rainfall. Subrefraction might decrease and superrefraction increase this range as with any other target. Although moderate or heavy rain does not fall 15 symmetrically all round a storm, it is continuous for at least 50 miles in a broad sector extending from the "eye" of the storm where there is a circular area of relatively light winds and clear or partially clear sky. By the time radar evidence of the exact position of the storm is available, the ship will probably be already in fairly high seas and 20 experiencing winds of force 9 or 10. There should still be time, however, for her to avoid the centre of the storm.

Note.—In accordance with Article 35 of the International Convention for Safety of Life at sea it is the duty of every ship who suspects the presence or formation of a tropical revolving storm immediately to 25 inform other vessels and shore authorities with all the means at her disposal. Weather reports should be made by radio at frequent intervals giving as much information as possible, especially corrected (*not* for diurnal variation as in (a) above) barometer readings. If barometer readings are uncorrected this fact should be stated in the 30 signal.

Information required by the seaman before deciding upon action to be taken.—To decide on the best course of action if a storm is suspected to be in the vicinity, the mariner requires to know:—

- (a) the bearing of the centre of the storm; 35
- (b) the semicircle in which the ship is situated;
- (c) the path of the storm.

If an observer faces the wind, the centre of the storm will be from 9 to 11 points on his right-hand side in the northern hemisphere when the storm is about 200 miles away, i.e., when the barometer has fallen 40 about 5 millibars and the wind has increased to force 6 or thereabouts; as a rule the nearer one is to the centre the more nearly does the angular displacement of the wind approach 8 points. A further check on the bearing of the centre may often be obtained by noting the direction from which the swell is coming. The swell travels approxi- 45 mately directly outward from the storm centre.

The semicircle in which the ship is situated can be determined by taking two such bearings with an interval of from two to three hours between observations, provided that allowance is made for the ship's movement. It can be assumed that the storm is not travelling towards 50 the equator; and, if in a lower latitude than 20°, its path is most unlikely to have an easterly component; and, on the rare occasions when neither of these statements applies, the storm is moving very slowly. (Exceptions to this are most likely in the South Pacific, where occasional storms often move off on a course almost due south develop- 55 ing an easterly component at a latitude of about 15°, and in the western

North Pacific where some of the out-of-season storms may recurve at an early stage.)

In a moving ship associated with a storm progressing at an unknown rate, it is very difficult to estimate from an apparent shift of wind the direction and speed of the storm's motion relative to the ship. The surest method of ascertaining the true shift of wind and thereby finding out in which semicircle the vessel is situated, *is to stop the ship during the period between the two bearings*. If in either hemisphere, these observations show that the wind is veering, the ship is in the right-hand semicircle; if the wind is backing she is in the left-hand semicircle; and if the wind remains steady in direction then the vessel is in the direct path of the storm, which is the most dangerous place of all.

The diagram headed "Typical Paths of Tropical Storms" (at the end of this article) illustrates the terms "dangerous semicircle" and "navigable semicircle." The former lies on the side of the path towards the usual direction of recurvature, i.e., the right-hand semicircle in the northern and the left-hand semicircle in the southern hemisphere. It is so called because a sailing or low-powered vessel caught in it may be blown towards the path along which the storm will pass, or the storm may recurve and the centre pass over her. The navigable semicircle is that which lies on the other side of the path. A ship situated within this semicircle will tend to be blown away from the storm centre, and the recurvature of the storm will increase her distance from the centre.

Practical rules for avoiding tropical storms.—In whatever situation a ship may find herself, the matter of vital importance is to avoid passing within 50 miles or so of the centre of the storm; it is preferable to keep outside a radius of 200 miles or more, because at this distance the wind does not often exceed force 7 (and is generally not more than force 6), and freedom of manœuvre is maintained. If a ship has at least 20 knots at her disposal, and shapes a course that will take her most rapidly away from the storm before the wind has increased above the point at which her movement becomes restricted, it is seldom that she will come to any harm.

Sometimes a tropical storm moves so slowly that a vessel, if ahead of it, can easily outpace it or, if astern of it, can overtake it. Since, however, she is unlikely to feel seriously the effects of a storm so long as the barometer does not fall more than 5 mb. (corrected for diurnal variation) below the normal, it is recommended that frequent readings should be made if the presence of a storm in the vicinity is suspected or known, and that the vessel should continue on her course until the barometer has fallen 5 mb., or the wind has increased to force 6 when the barometer has fallen at least 3 mb. If and when either of these events occurs, she should act as recommended in the following paragraphs, until the barometer has risen above the limit just given, and the wind has decreased below force 6. Should it be certain, however, that the vessel is behind the storm, or in the navigable semicircle, it will evidently be sufficient to alter course away from the centre.

In the northern hemisphere.—(a) If the wind is veering, the ship must be in the dangerous semicircle. A steam or other power-driven vessel should proceed with all available speed with the wind 1 to 4 points (depending upon her speed) on the starboard bow, and should subsequently haul round to starboard as the wind veers, thereby tracing a course relative to the storm as shown by the pecked line in the diagram. If a steamer has insufficient room to make much headway when in the dangerous semicircle she should heave to in the

most comfortable position relative to the wind, preferably with the wind on her starboard bow so that she is heading away from the centre of the storm.

(b) If the wind remains steady in direction, or if it backs, so that the ship seems to be nearly in the path (it is sometimes difficult to determine satisfactorily if indeed the ship is nearly in the path, particularly if in the dangerous semicircle, because the wind does not always behave according to rule) or in the navigable semicircle respectively, a steam vessel should bring the wind well on the starboard quarter and proceed with all available speed, subsequently altering course to port as the wind backs, thus tracing a course relative to the storm as shown by the pecked line in the diagram. 5 10

In the southern hemisphere.—(a) If the wind is backing, the ship must be in the dangerous semicircle. A steam or other power-driven vessel should proceed with all available speed with the wind 1 to 4 points (depending upon her speed) on the port bow, and should subsequently haul round to port as the wind backs, thereby tracing a course relative to the storm, as shown by the pecked line in the diagram. If a steamer has insufficient room to make such headway she should heave-to in the most comfortable position relative to the wind, preferably with the wind on her port bow so that she is heading away from the centre of the storm. 15 20

(b) If the wind remains steady in direction, or if it veers, so that the ship seems to be nearly in the path (it is sometimes difficult to determine satisfactorily if indeed the ship is nearly in the path, particularly if in the dangerous semicircle, because the wind does not always behave according to rule) or in the navigable semicircle respectively, a steam vessel should bring the wind well on the port quarter and proceed with all available speed, subsequently altering course to starboard as the wind veers, thus tracing a course relative to the storm as shown by the pecked line in the diagram. 25 30

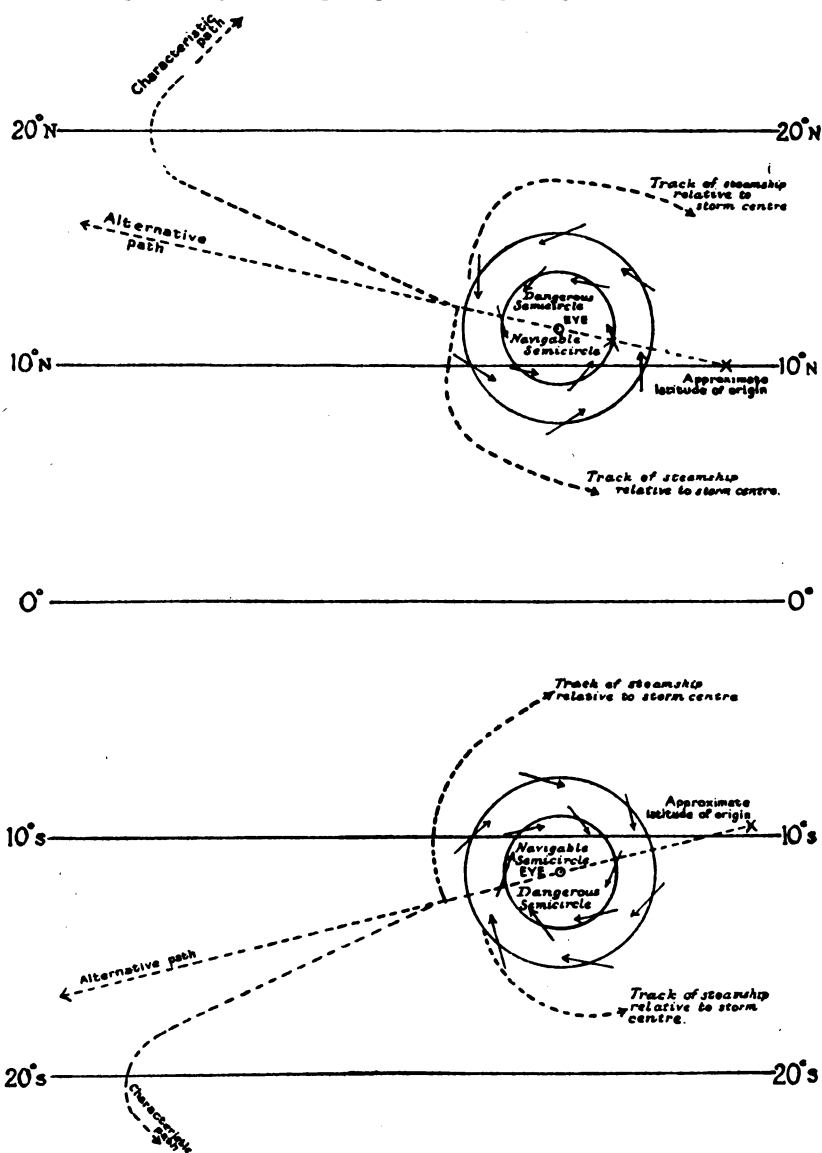
If there is insufficient room to run when in the navigable semicircle, and it is not practicable to seek a safe and effective shelter before the storm begins to be felt, a vessel should heave-to in the most comfortable position relative to the wind and sea, bearing in mind the proximity of land. 35

If a ship finds that she is in the direct path of the storm and has no room to run into the navigable semicircle as directed above, it should be considered, bearing in mind possible recurvature, whether she should endeavour to make her way into the "dangerous" semicircle (where she may at least be better off than remaining in the direct path of the storm) and continue to steam to windward as fast as she can so as to get as far as possible from the centre. 40

If in harbour, or at anchor, a seaman should be just as careful as at sea in watching the shifting of the wind and estimating the movement of the storm relative to himself, so that he may consider shifting his berth with advantage or otherwise act according to circumstances. It is usually preferable, however, to put to sea if this can be done in sufficient time to avoid the worst of the storm. Riding out a tropical storm, the centre of which passes within 50 miles or so, in a harbour or anchorage, even if some shelter is offered, is an extremely unpleasant and hazardous experience, especially if there are other ships in company. Even if berthed alongside, or with special moorings and long bridles in use, a ship cannot feel entirely secure. 45 50

Discretion must, of course, be used. In the case of a low-powered or small vessel with, for example, insufficient warning to enable her to 55

TYPICAL PATHS OF TROPICAL STORMS



Note.—In this diagram the isobars are shown as concentric circles about the eye; in practice this is usually the case within 150 miles or so of the centre. Outside this distance the isobaric form often loses its symmetry and strong winds often extend farther on the polar side than on the equatorial.

gain sufficient distance from the storm by putting out to sea, it will be preferable to remain in a reasonably sheltered harbour. If at sea and warning of an approaching storm is given and there is considered to be insufficient time or sea room to avoid the dangerous part of the storm area, it may be advisable for vessels of this type to seek shelter. 5 In the China Sea, for example, there are so-called typhoon harbours which are listed in the Admiralty Pilot. In all cases, however, the mariner must use seamanship and initiative.

(3) **Local modification of the weather near the coast.** The information given in Chapter I on climate and weather in the area 10 covered by the Pilot refers necessarily to the coastal and sea regions generally but cannot attempt to deal with the local effects on the wind and weather of each separate headland, bay, or creek. The following notes, however, should prove helpful in showing how the weather in the general vicinity is likely to be modified by the topog- 15 raphy or shape of the land close to the actual place in which the mariner is concerned.

- (i) If the coastline is steep-to, onshore winds that approach it at an angle are usually deflected nearly along the shore and increased somewhat in speed. And when the wind approaches 20 a strait whose direction is somewhat similar to that of the wind, the wind tends to blow along the strait and increases in speed as the strait narrows.

When a strong wind blows directly towards a very steep coast, there is usually a narrow belt of contrary gusty winds 25 close to the coast.

- (ii) Similarly when the wind blows onshore towards the entrance to a wide estuary, especially one with hills on both sides, it generally tends to blow up the estuary. This effect is most marked in the afternoon but there is often no such tendency 30 during the night and early morning.
- (iii) An offshore wind is often squally on the lee side of hilly coasts, especially when the air is much colder than the sea, as for example when it blows off snow-covered land and when the wind over the open sea is force 5 or more. 35
- (iv) Near headlands or islands with steep cliffs there may be large changes in direction (up to about 90°) and speed of the wind in addition to those mentioned above.
- (v) During quiet and warm weather with clear or fairly clear skies, a sea breeze is of common occurrence during the warmer 40 part of the day; it is especially frequent in the tropics and sub-tropics. It blows onshore from, on the average, 4 to 8 hours after sunrise until shortly before sunset, reaching its maximum development during the afternoon (1300 to 1600); if there is an appreciable regional or general wind, then this will be modified 45 by the onshore sea breeze. Under particularly favourable circumstances such as high dry temperatures, relatively cool sea, and hilly background to coast, the sea breeze may blow as much as force 4 (occasionally 5) and extend 20 miles or more to seaward from the shore. At night under similar 50 circumstances a lighter breeze blows from the land to the sea; it seldom extends more than 5 miles from the shore nor does it become appreciable much before 2200 local time; under favourable conditions, as in the tropics, it usually lasts until an hour or so after sunrise. 55
- (vi) When sea fog that is caused by the passage of warm air over a

colder sea surface is general over the open sea, visibility is better close to leeward of a hilly island or promontory than to windward. This effect is most marked in late spring and summer, during the early afternoon when the land is at its warmest, and then applies to low-lying land as well.

- (vii) Radiation fog which forms over land on quiet nights with clear skies, mainly in autumn and winter, and sometimes spreads a few miles out to sea, is least thick during the afternoon and is often worst during the first hour or two after sunrise.

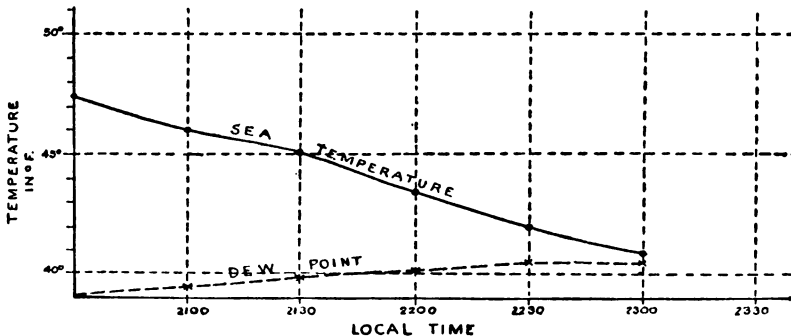
(4) **Forecasting sea fog.**—The most frequent type of fog in the open sea is that caused by relatively warm air flowing over a colder sea. Warning of this type of fog may be obtained by frequent observations of air and sea surface temperatures; if the sea temperature falls below the dewpoint of the air, fog is almost a certainty. The following procedure is recommended whenever the temperature of the air is higher than, or about equal to, that of the sea, especially at night when approaching fog cannot be seen until shortly before entering it.

Sea and air (both dry and wet bulb) temperatures should be observed at intervals of about 5 miles and the sea temperature plotted against dewpoint. The dewpoint is obtainable from tables published in various text-books, but at temperatures up to about 60° F. a close enough approximation may be obtained by assuming it to be the same amount below the wet-bulb temperature as the latter is below the dry-bulb temperature; for example, if the dry bulb reads 50° F. and the wet bulb 48°, the dewpoint is about 46°. If the curves of sea temperature and dewpoint converge, fog may be expected by the time at which they coincide.

The figure below represents conditions that might be found by a low-powered ship in about long. 40° W. proceeding westward on the appropriate lane route for Halifax, Nova Scotia. At 2200 it would become evident that there is a probability of running into fog in about an hour's time, assuming that the sea temperature continues to fall at about the same rate that it has done during the last 1½ hours.

From the appropriate chart of average sea surface temperatures it can be seen where a rapid fall of temperature may be expected, so that if the dewpoint is within 5° or so of the sea temperature when approaching the colder water zone, this will also give a fairly reliable warning of fog.

If it is desirable and practicable to escape from fog, a ship should steer for warmer water which will again be evident from the charted isotherms.



Fog, or very poor visibility, at sea may also occur in snow or heavy rain, or in association with the passage of a warm front or occlusion, or, when within 20 miles or so of land, it may occur as a result of radiation fog extending from the land; in high latitudes in winter, sea smoke may be met near land, when very cold offshore winds are blowing, or near extensive ice. The method described above will not give warning of these fogs, of which frontal fogs, though common in middle latitudes, are neither so extensive nor so persistent in any one locality, and the other fogs mentioned are rarely encountered far from land (or extensive ice).

10

IMPORTANT.

Details of Lights, Fog Signals, and Time Signals (visual) are not included in this volume; for this information the Admiralty List of Lights, Vol. 5, should be consulted.

Information regarding Vertical Movement of the Water is not included; for this the Admiralty Tide Tables should be consulted.

Details of Radio information (weather bulletins, storm and navigational warnings, time signals, fog signals, and D.F. stations) are not included; for this information the Admiralty List of Radio Signals should be consulted.

THE MEDITERRANEAN PILOT

VOL. II

CHAPTER I

GENERAL REMARKS—CURRENTS—TIDES AND SEA LEVEL—SIGNALS—
FISHERIES—AIR LIGHTS—MEASURED DISTANCES—LIFE-SAVING SERVICE
—BUOYAGE SYSTEMS—PILOTAGE—STANDARD AND SUMMER TIMES—
COMMUNICATIONS—FUEL—DOCKYARDS—MINED AREAS—SUBMARINE
CABLES—REGULATIONS—CLIMATE AND WEATHER—CLIMATIC TABLES

GENERAL REMARKS.—Southern coast of France.—The southern coast of France between Cap Cerbère and the Italian frontier is about 400 miles long. Between Port Vendres and Marseille it is low and marshy, while eastward of Marseille it is high, rocky and indented. Between these two regions is the delta of the Rhône, which, owing to alluvial deposit, advances seaward a little every year. Generally speaking the coast is clear of dangers and may be approached to within a mile. There are numerous well-sheltered harbours of which the most important are : Port Vendres, Sète, Marseille, Toulon, Antibes, and Nice. 5

This coast is dominated westward by the Pyrénées, and eastward by the Alpes Maritimes. The most conspicuous summits from seaward are : the snow-clad Canigou, Doigts de Cadaqués, and Montagne de la Galère or de Tauch, of the Pyrénées ; and Pilon du Roi, Montagne de Saint Cyr or Carpiagne, Montagne de la Sainte Baume, Sommet le Coudon, Mont de Caumes or de Pomet, and Pilon de Saint Vincent of the Alpes Maritimes. 10

The rivers which flow into the sea along this coast are numerous, but are without importance to navigation. The principal river, the Rhône, flows into the sea through a delta encumbered with mudbanks. 20

Products and industry.—The commerce of the southern coast of France is very considerable ; the chief exports are wines, spirits, silk, sugar, soap, cork, salt, wheat, and flour. The vine, orange, citron, olive, fig, pomegranate, and mulberry are largely cultivated. There are fisheries of anchovy, sardine, and tunny. 25

Currency.—Weights and Measures.—The French monetary unit is the franc of 100 centimes.

The metric system of weights and measures is used in France and Corsica.

British Consular officers.—British Consular officers are stationed at Marseille and Nice.

- 5 **Corsica.**—This island, which is separated from Sardinia by Bonifacio strait, and from the coasts of France and Italy northward by the Ligurian sea, forms a Department of the Government of France. It has an area of about 3,360 square miles and a population of about 268,000. Its western coast is rocky and indented; the eastern coast

10 is low and straight, except the northern part.
A range of mountains traverses the island from north to south, and the principal peaks are visible from seaward.

There are numerous rivers which have the character of torrents.

The principal ports are Ajaccio and Bastia.

- 15 **Products and industry.**—The chief industry is stock raising. The principal products are timber, honey, olive oil, fruits and cheese. Fish are caught along the coast. Sponges and coral are procured. There are lead, copper, antimony and asbestos mines.

- Currency.—Weights and measures.**—The French monetary

20 unit and the metric system of weights and measures are used in Corsica.
British Consular officer.—A British Consular officer is stationed at Ajaccio.

- Monaco.**—Monaco is a small principality with its own seaboard of about 2 miles, but is surrounded on its landward side by the French

25 Department of Alpes Maritimes, and is situated about 5 miles south-westward of the boundary between France and Italy.
The Government is carried out under the authority of the Prince by a Ministry assisted by a Council of State. The legislative power is exercised by the Prince and the National Council, which consists of

30 10 members elected for four years.
British Consular officer.—The British Consular officer at Nice is also responsible for Monaco.

- Italy.**—Italy consists for the most part of a peninsula extending south-eastward for some 500 miles from the Alps, and varying from

35 70 to 150 miles in breadth between the Adriatic sea north-eastward and the Tyrrhenian sea south-westward; its south-eastern end is bounded by the Ionian sea and Golfo di Taranto by which it is deeply indented.

- The Republic of Italy includes Sicily, Sardinia, Archipelago Toscano,

40 Isole Eolie or Lipari, and several smaller groups.
Sicily, Sardinia and Isole Eolie are described in Mediterranean Pilot, Vol. I.

- The western coast of Italy, southward of Golfo di Genova to about Golfo di Napoli, is in general low and sandy, fronting a considerable

45 extent of marsh and swamp, the country round which is thickly wooded, especially near the mouths of the Arno and Tevere. In places it is high or bold and precipitous. The coast of the south-western extremity of the peninsula, from Scilla to Capo Spartivento, consists of high, steep cliffs. Thence north-eastward to Golfo di Squillace, it

50 is at first high, the shores of Golfo di Taranto becoming gradually lower.
Changes in the levels of the coast have been caused by volcanic agency, and the coasts have extended, chiefly in the vicinity of the Tevere, from alluvial deposits. Although generally low, the coast is

55 bold, there being depths of 5 fathoms (9^m1) one mile offshore except off Livorno, southward of Capo Linaro, and off Punta Licosca.

The principal rivers are the Arno, Cecina, Ombrone, Tevere, Gari-gliano, Volturno, Brodano, and Basento; the estuaries of the rivers, with the exception of the Tevere, are shallow and admit only very small craft.

The Italian peninsula is traversed by the Apennine range, which, 5 towards the southern end or toe, approaches the Calabrian coast; Gran Sasso d'Italia or Monte Corno, its highest peak, situated about 58 miles east-north-eastward of Rome, is 9,160 feet (2,792^m0) high, and covered with snow for about 9 months annually. The greatest elevations within 6 miles of the coast are Monte Carmo, Altissimo, 10 Petrella, Vesuvio, Cocuzzo, and the Reggio mountains. The country around and southward of Napoli is a vast volcanic region; Monte Vesuvio is the only active volcano on the mainland; there are also Etna in Sicily and Stromboli and Vulcano in Isole Eolie.

Arcipelago Toscano or the Tuscan Archipelago, situated between 15 the western coast of Italy and the northern part of Corsica, consists of the islands Gorgona, Capraia, Elba, Pianosa, Montecristo, Giglio and Giannutri, the small islets Palmaiola and Cerboli, and the Africa and Formiche di Grosseto groups of rocks.

The chief ports and anchorages within the limits of this volume are 20 Imperia, Savona, Genova (Genoa), La Spezia, Livorno, Civitavecchia, Gaeta, Napoli (Naples) and Taranto on the mainland, and Portoferraio in Elba.

Products and industry.—There is a large cotton industry, silk culture is carried on extensively and the manufacture of sugar and 25 cheese is important. The principal crops are wheat, oats, beans, maize, grapes and olives. The anchovy, sardine and tunny fisheries are important. There are iron, zinc, manganese, lead, sulphur ore and asphalt mines. There are large ironworks at Savona. The iron industry on the coast between Savona and La Spezia is the most 30 important of the district. There are large iron-rolling mills at Livorno.

Currency.—Weights and measures.—The Italian monetary unit is the lira of 100 centesimi.

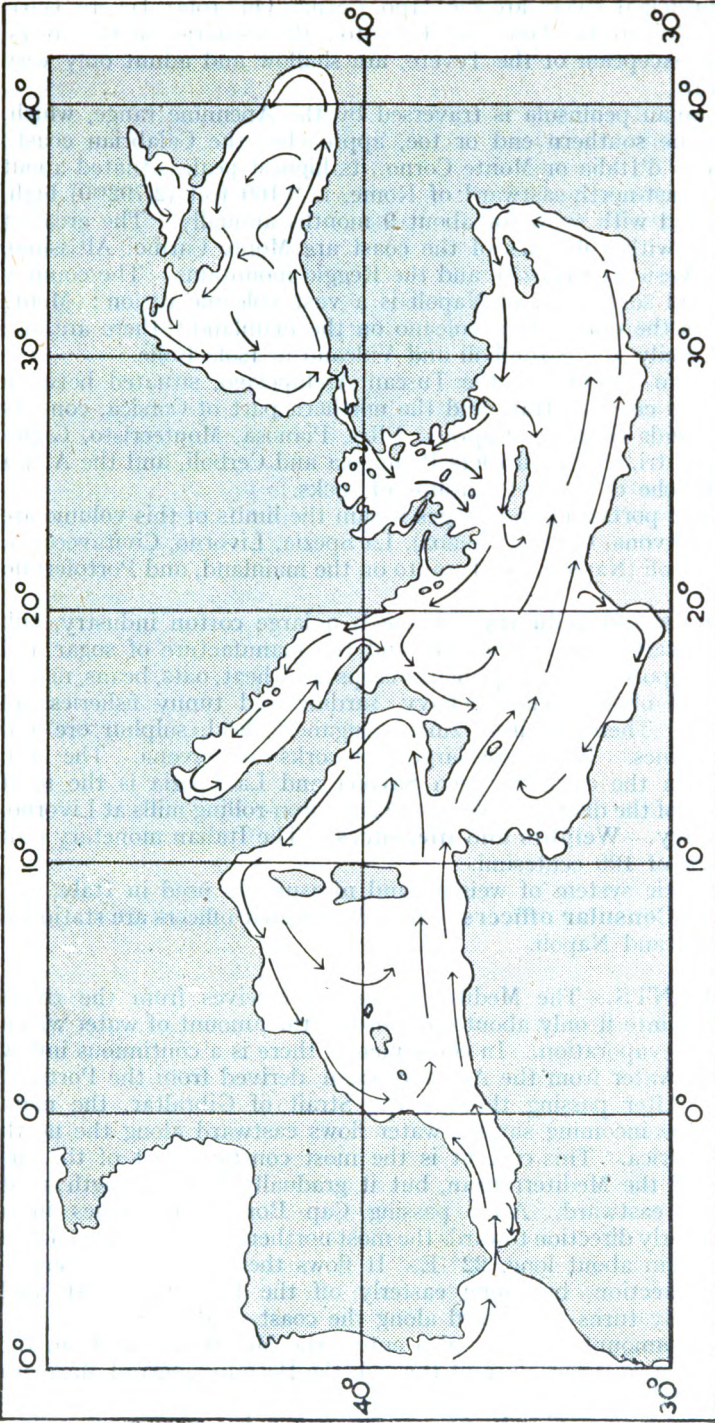
The metric system of weights and measures is used in Italy.

British Consular officers.—British Consular officers are stationed 35 at Genova and Napoli.

CURRENTS.—The Mediterranean sea receives from the rivers which flow into it only about one-third of the amount of water which it loses by evaporation. In consequence, there is a continuous inflow of surface water from the Atlantic ocean, derived from the Portugal 40 current. After passing through the Strait of Gibraltar, the main body of the incoming surface water flows eastward along the north coast of Africa. This current is the most constant part of the circulation of the Mediterranean, but it gradually loses strength as it penetrates eastward. After passing Cap Bon, it continues in a 45 south-easterly direction towards the most northerly part of the coast of Cyrenaica, in about long. 22° E. It flows thence in an east-south-easterly direction, becoming easterly off the Egyptian coast, and subsequently turns northward along the coast of Palestine.

A small amount of water also enters the Mediterranean from the 50 Black sea, as a surface current through the Bosphorus, Sea of Marmara and the Dardanelles.

By evaporation, the Mediterranean water becomes more saline, with a corresponding increase of density. It therefore sinks and the excess of this denser bottom water emerges into the Atlantic ocean, 55



GENERAL SEA SURFACE CIRCULATION OF THE MEDITERRANEAN AND BLACK SEAS.

over the sill forming the shallow Strait of Gibraltar, as a west-going subsurface current below the east-going surface current. A small quantity of water also emerges as a subsurface current flowing through the Dardanelles, Sea of Marmara and Bosphorus into the Black sea, beneath the stronger surface current flowing in the opposite direction. 5

The western and eastern basins of the Mediterranean are separated by Italy and Sicily, and are connected only by Malta channel and by the narrow Stretto di Messina. The fundamental surface circulation of the Mediterranean consists of a separate counterclockwise movement of the water in each of the two basins, with the main east-going current in Malta channel common to both. The circulation is shown in broad outline in the figure on page 4. 10

The circulation of the western basin is formed by a branch of the main east-going current which flows along the northern coast of Sicily, up the western coast of Italy, and thence along the southern coast of France and eastern coast of Spain. The circulation of the eastern basin is completed as follows. The current flowing northward along the coast of Palestine turns westward along the southern coast of Asia Minor. It passes westward along the northern coast of Crete, with a branch making the counterclockwise circulation of the Ægean. The current then flows along the western coast of Greece, and a branch makes a counterclockwise circulation of the Adriatic. The current flows south-westward along the south-eastern coast of Italy and finally turns south-eastward in the western part of the Ionian sea to rejoin the main east-going current. 20 25

The general circulation, described above in broad outline, is not yet fully known in detail. Away from the main shipping routes, the number of available current observations is small and this particularly applies to the eastern end of the Mediterranean, the Ægean and much of the northern coast-line of the whole of the sea. Owing to the complexity of the northern coastline and the numerous islands there are probably many small eddies and other local currents forming essential parts of the general circulation. 30

The general circulation is not experienced as a steady flow in all parts of the sea, at the same time; the actual currents are variable. The currents, at any time, are largely affected by the wind, and local drift currents of a temporary nature, but of sufficient strength to mask the general circulation, are set up when the wind has been strong and continuous from any one quarter. It is thus possible, in any part of the Mediterranean, to find a current setting towards any point of the compass; currents directly opposed to those anticipated may sometimes be met. On the other hand, the wind effect may be such as to enhance the strength of the normal circulation; for example, strong westerly winds will temporarily strengthen the ingoing current through the Strait of Gibraltar. 40 45

The degree of variability is not the same everywhere. In the Strait of Gibraltar itself the east-going current is nearly constant in direction. Apart from this, the most constant part of the circulation is that on the route between Gibraltar and Cap Bon. Here, from about 50 to 65 per cent. of all currents observed throughout the year set between north-east and south-east, the majority of those setting due east. The remainder may set in any direction, including westerly sets temporarily produced by easterly gales. From Cap Bon to Port Said, the variability is more marked. The westerly return current along the northern shores and the currents of the central part of the basins are the most variable. 50 55

The remarks on current strength which follow are derived from the charting of currents observed during the period 1910 to 1939. The great majority of currents on the main shipping routes do not exceed the rate of one knot ; the highest proportion so doing is found between 5 Gibraltar and Cap Bon. The area of strongest current is between Gibraltar and long. 2° W. ; here the frequency of currents exceeding one knot is about 25 per cent. from August to October, decreasing to about 10 per cent. from February to April. A few currents with rates of from 2 to 3 knots and over have been recorded westward of 10 long. 2° E. from May to January ; the majority of these occur westward of long. 2° W.

Gulf of Lions.—The currents in the Gulf of Lions are uncertain and vary with the force and direction of the wind. Onshore winds cause a current parallel with the coast which is west-going off the coast 15 adjoining the Rhône delta, and south-going and south-east-going between Sète and Cap Creux. It sometimes attains a rate of 2 knots. This current continues to set westward some time after the onshore wind has been succeeded by an offshore breeze, but 3 or 4 miles offshore it is much less felt. When a fresh wind is blowing in the offing which 20 has not yet reached home to the coast the current often appears in advance, this phenomenon is described by the local fishermen as “ du pied du vent.”

Coasts of Provence.—The currents on this coast are weak and do not exceed one knot ; they are usually west-going. After north- 25 westerly gales, when the wind moderates, they set westward or north-westward against the wind.

Corsica.—There are no regular currents on the coasts of Corsica except in the Bonifacio strait ; they are influenced by the winds, and are west-going with easterly winds and vice versa. In Bonifacio 30 strait the east-going current attains a rate of 2 knots after a north-westerly gale. The currents follow the coast : the west-going current becomes more north-westerly as it traverses the strait ; the east-going current follows Passage de Piantarella, and is deflected northward and north-eastward along the eastern coast of Corsica.

35 **Golfo di Genova.**—In Golfo di Genova the currents follow the trend of the shore from eastward to westward, and are generally felt at a distance of from one to 2 miles offshore ; they are strongest in the immediate vicinity of headlands. At Capo di Noli, Capo Lena, and Capo delle Mele the west-going currents attain their greatest rate.

40 Although no regular study has been made of the coastal currents, sufficient data exist to be able to state :—That their mean rate is one knot ; that their greatest rate is on the Western Riviera when strong northerly winds prevail ; it then occasionally reaches 2 knots ; that generally when a west-going current is running off capes and headlands 45 there is a weaker east-going current inshore ; that when a south-easterly wind is blowing or beginning in the open, currents in the vicinity of headlands are west-going.

Western coast of Italy.—On the coast between Livorno and Stretto di Messina the currents are very variable, being subject to the force and 50 direction of the winds. From Civitavecchia to Napoli, however, they are most frequently north-east-going near the land, and the mariner must guard against them, particularly in very fine weather. The gales in the Gulf of Lions and Golfo di Genova have a great influence on the currents off this coast ; with winds from between north and north-west 55 in the former gulf the current at Cap Corse is east-going, and amongst Arcipelago Toscano, east-south-east-going.

With a continuance of south-westerly winds the current is east-going at Cap Corse, north-going and north-east-going between Corsica and Italy, and north-west-going on the coast, but after these winds, especially if they are followed by northerly winds in Golfo di Genova, the current becomes south-going and sometimes attains a rate of 5
2 knots off Cap Corse.

Off Canale di Piombino, with fresh north-westerly winds, the current attains a rate of from $1\frac{1}{2}$ to $2\frac{1}{2}$ knots, and is specially strong on the prolongation of the axis of the canal.

South-western coast of Italy.—Along the coast of Calabria the 10
currents follow the changes of the streams in Stretto di Messina, whose influence is strong between Scilla and Bagnara, becomes weak at Nicotera, and disappears at Capo Vaticano.

TIDES AND SEA LEVEL.—The tides in that portion of the Mediterranean dealt with in this volume are of little importance to 15
navigation, their range rarely exceeding one foot (0^m3) anywhere in the area. The sea level along the southern coast of France generally rises during a period of strong south-easterly winds and falls during a period of strong north-westerly winds.

High water occurs practically simultaneously along the whole western 20
coast of Italy. The tidal streams are correspondingly weak and, except in the vicinity of Stretto di Messina, are negligible compared to the drift currents set up by wind.

During February, March and April, the mean sea level in the central Mediterranean may fall as much as $1\frac{1}{2}$ feet (0^m5) below the normal. 25

SIGNALS.—**Signals to be made by vessels inconvenienced by searchlights.**—In the event of the navigation of a vessel being inconvenienced by the glare from searchlights she should make the International Code signal ZO in morse code (— · · — —) by 30
lamp and by whistle, siren or foghorn.

Both the light and sound signals should be employed whenever possible, and should be repeated until the inconvenience is removed.

This signal should only be used in cases of real urgency, as unless the vessel is actually in the rays of a searchlight, it is not possible for the 35
operators to know which projector is affected.

This signal is designed to assist mariners; no liability whatever will be admitted.

Signals from aircraft.—See Admiralty Notice to Mariners No. 4 of each year.

Signals made by British minesweepers.—See Admiralty Notice 40
to Mariners No. 10 of each year.

Signals to denote the presence of British submarines.—See Admiralty Notice to Mariners No. 8 of each year.

Signals to denote the presence of French submarines.—When meeting other vessels, submarines navigating on the surface will 45
conform with the regulations for preventing collisions at sea.

Although submerged submarines may be met in all French waters, masters of vessels should be particularly on the look-out for them, as regards the area covered by this volume, in the vicinity of Toulon and Îles d'Hyères. 50

For the convenience of vessels making or leaving ports frequented by submarines, zones, in which submarines are prohibited from diving, have been established. Masters of vessels frequenting these ports are particularly recommended to navigate in these zones. The limits of the

zones which are in the area covered by this volume are mentioned in the body of this work.

When a submerged submarine is navigating in the roadsteads of a naval port, she is escorted by a small vessel which displays in the fore part of the vessel the signal HP of the International Code of Signals. Vessels in the vicinity must be navigated with great caution, and a wide berth must be given to the escorting vessel which usually, but not always, follows the submarine.

Signals for Italian minesweepers.—Italian naval vessels employed minesweeping will display the following signals.

By day.—A ball at the masthead and a ball at each of the two yardarms, or at the yardarm corresponding to the side from which the sweep extends, if the vessel has only one branch of the apparatus in the sea; the balls to be visible all round the horizon.

The balls should have a diameter of at least 2 feet (0^m6); in addition, the balls at the yardarms should be lower than the masthead ball and should be distant not less than 6 feet (1^m8) vertically from it.

At night.—A green light at the masthead and a green light at each of the two yardarms, or at the yardarm corresponding to the side from which the sweep extends, if the vessel has only one branch of the apparatus in the sea.

The lights should be visible all round the horizon at a distance of at least 2 miles; in addition, the yardarm lights should be not less than 6 feet (1^m8) lower than the masthead light.

The signal HF of the International Code of Signals will be displayed by the leader of the minesweepers and in the case when a vessel is approaching the sweepers within a distance of one mile, this signal will be repeated by all minesweepers.

In general, all vessels must keep well clear of minesweepers engaged in sweeping, if possible at a distance of at least one mile.

Minesweepers employed on magnetic or acoustic sweeping will display the signals for a minesweeper engaged in mechanical sweeping with sweep on each side in use.

French signal stations.—On the coast of France signal stations are usually placed in prominent positions and are connected with the general telegraph system. Vessels can communicate with these stations by means of the International Code of Signals.

There are signal stations at Île de Pomègues, Cap Cèpet, Cap Ferrat, and Cap Martin on the French coast, and at Cap Sagro, Pointe de la Chiappa, Grande Sanguinaire, Cap Cavallo, Cap Corse and Cap Pertusato in Corsica, at which reports can be transmitted through Lloyds.

Should a shipping casualty occur near a signal station, a black flag will be displayed at the masthead to denote that a casualty has occurred in the vicinity of the station.

The following signals are made when the lifeboat is in sight of the station :—

A red pendant above the black flag by day, or red flares at night, signifies that the lifeboat should steer to the right of the signal station.

In addition, a series of long flashes may be made by searchlight by day and at night.

A red pendant below the black flag by day, or green flares at night, signifies that the lifeboat should steer to the left of the signal station. In addition a series of short flashes may be made by searchlight by day and at night.

A black flag at the masthead by day, or white flares at night, signifies

that the lifeboat should steer away from the signal station. In addition, a *white fixed* light may be exhibited by day and at night.

A black flag at the dip by day, or *red* and *white* flares at night, signifies that the lifeboat should steer towards the signal station. In addition, a series of *alternate long-short* flashes may be made by search- 5
light by day and at night.

The following signals may be made at night by the lifeboat.

A *red* flare indicates that the lifeboat is proceeding to the wreck, which should exhibit lights or burn flares to indicate its position.

A *green* flare indicates that the lifeboat is returning. 10

A *white* flare indicates that the lifeboat wishes to be informed in which direction, relative to the signal station, she should steer in order to reach the wreck. This signal will be answered by one or other of the first-mentioned signals.

Note :—A broad pendant over a flag denotes that a lifeboat is going 15
out.

French weather signals.—The following signals are hoisted at signal stations and port offices for half an hour in the morning and evening, and indicate the weather existing at sea :—

| | |
|---------------------------------|--|
| A flag of any colour | Weather doubtful ; barometer in- 20 clined to fall. |
| A broad pendant | Appearance of bad weather, heavy sea ; barometer falling. |
| A pendant | Appearance of better weather ; barometer rising. 25 |
| A flag over a broad pendant . . | Entry into the port is dangerous. |
| No signal | Fine settled weather. |

French storm signals.—The following signals are shown from the signal stations and port offices when an atmospheric disturbance is reported to be approaching :— 30

| By day. | At night. | Significance. |
|---|---|--------------------------------------|
| A cone point up | Two <i>red</i> lights dis- posed vertically | North-westerly gale probable. |
| Two cones disposed vertically, points up | A <i>red</i> light over a <i>white</i> light | North-easterly gale 35 probable. |
| A cone point down | Two <i>white</i> lights dis- posed vertically | South-westerly gale probable. |
| Two cones, disposed vertically, points down | A <i>white</i> light over a <i>red</i> light | South-easterly gale probable. 40 |
| A ball | A <i>red</i> light | Bad weather probable. |
| Two balls, disposed vertically | Two <i>red</i> lights, dis- posed horizontally | Storm or strong gale probable. |
| A black flag or a black cylinder | | The wind will prob- ably veer. 45 |
| Two black flags or two black cylinders, dis- posed vertically | | The wind will prob- ably back. |

The signal for the veering or backing of the wind is displayed along-
side the signal indicating the direction. 50

These signals are displayed for 48 hours from the time of receiving notification from the National Meteorological Office of France, except as directed otherwise by that office.

French ports.—*Signals regulating entry or departure :—*

The following signals will be shown to prohibit entry or departure from French ports in times of peace :—

| | By day. | At night. | Significance. |
|----|---|--|------------------------------------|
| 5 | | In case of emergency. | |
| | Three balls disposed vertically | Three <i>red</i> lights disposed vertically | Entrance prohibited. |
| | | In normal circumstances. | |
| | A cone point up between two balls, disposed vertically | A <i>white</i> light between two <i>red</i> lights, disposed vertically | Entrance prohibited. |
| 10 | Two cones, points together, above a ball, all disposed vertically | A <i>white</i> light above a <i>red</i> light and below a <i>green</i> light | Entrance and departure prohibited. |
| 15 | Two cones, points together above another cone point down, all disposed vertically | A <i>white</i> light between two <i>green</i> lights, disposed vertically | Departure prohibited. |

In ports where the traffic is of little importance the following simplified code of signals may be used :—

| | By day. | At night. | Significance. |
|----|-------------------------------|---|------------------------------------|
| | A red flag | A <i>red</i> light | Entrance prohibited. |
| | A green flag | A <i>green</i> light | Departure prohibited. |
| 25 | A red flag above a green flag | A <i>red</i> light above a <i>green</i> light | Entrance and departure prohibited. |

French depth signals.—The depth above the chart datum is indicated by the following signals, the unit employed being 0^m2 or approximately 8 inches :—

| | By day. | At night | Signification. |
|----|-------------------|----------------------|---|
| 30 | A cone point down | A <i>green</i> light | One unit (0 ^m 2 or about 8 inches). |
| | A cylinder | A <i>red</i> light | 5 units (1 ^m 0 or about 3½ feet). |
| 35 | A ball | A <i>white</i> light | 25 units (5 ^m 0 or about 16½ feet). |
| | A cylinder | A <i>red</i> light | Half a unit (0 ^m 1 or about 4 inches). |

The cones or cylinders indicating the units are disposed vertically in one or two vertical lines. The cylinder indicating half a unit is displayed either under one of the lines indicating units or to the left of such lines.

The cylinders indicating each 5 units are disposed vertically and displayed to the right of the line or lines indicating the units.

The spheres indicating each 25 units are disposed vertically and displayed on the extreme right.

Right and left are those of the observer coming from seaward.

The same disposition applies to the night signals.

Italian signal stations.—On the coasts of Italy signal stations are usually situated in prominent positions, and are connected with the Italian telegraph system. They are generally, but not always, painted

black and white in chequers. The arrangements for signalling are similar to those on the coast of France.

Italian storm signals.—Storm signals similar to those in use on the French coast are exhibited. The following additional signal is also exhibited :—

| By day. | At night. | Significance. |
|---|----------------------|---|
| Two cones bases together, disposed vertically | A <i>red</i> light . | Gale probable, direction of wind unknown. |

Signals of distress at Italian lighthouses.—The following 10 signals of distress are shown from certain Italian lighthouses and light-vessels :

| By day. | At night. | Signification. |
|---|---|-----------------------------------|
| A black flag with a white ball in the centre | A <i>white</i> flare . | Doctor needed. |
| A black and white chequered flag or pendant | A <i>red</i> followed by a <i>white</i> flare | Apparatus damaged. |
| A black ball . . . | A <i>red</i> flare . . . | Water and provisions 20 required. |
| A black flag with a white ball in the centre above a black ball | A <i>white</i> followed by a <i>red</i> flare | Shipwreck. |
| A black ball above a black flag with a white ball in the centre | A <i>white</i> followed by a <i>red</i> and then a <i>white</i> flare | Aircraft accident. |

FISHERIES.—During certain seasons of the year fishing nets of large size (madragues or tonnara) are moored off the coasts of France and Italy for the purpose of catching tunny fish. These nets, which are sometimes upwards of one mile offshore, should be avoided, as apart from the damage to the nets should vessels pass through them, they are usually of such strength, that should the propeller become 35 fouled, the vessel might become unmanageable. In most cases the nets are marked by buoys or boats carrying lights at night ; their positions are given in the body of this volume. The nets off the Italian coast are generally laid out from March to November ; their positions are subject to alteration. 40

The fishing usually takes place at depths of from 8 to 22 fathoms (14^m6 to 40^m2), and within 10 miles of the coast.

On dark nights, small vessels may be encountered fishing by the light of flares. These lights, owing to the undulating motion of the sea, may have the appearance of *white flashing* lights and must not be 45 mistaken for navigational lights.

Marks for tunny nets.—The following are the marks for tunny nets off the Italian coast.

By day.—Two balls placed vertically not less than 6 feet (1^m8) apart, the upper one red, the lower white, shown from boats or floats 50 moored at a minimum distance of 328 feet (100^m0) seaward of the central outer portion of the main nets, at a height of not less than 16 feet (4^m9) above the sea.

12 AIR LIGHTS—MEASURED DISTANCES—LIFE-SAVING SERVICE [Chap. I.

At night.—A *red* light over a *white* light, visible not less than 4 miles, in place of the balls.

Tunny nets which do not extend more than $1\frac{1}{2}$ cables offshore, and are not placed in a position traversed or frequently anchored in by shipping, are exempt from showing the prescribed night signals.

AIR LIGHTS.—Mariners are warned that lights (with definite characteristics), which are not ordinary navigational aids, may be exhibited for the use of aircraft from structures near the coasts described in this volume.

10 These lights are often of great luminous power and altitude and may be the first lights or looms of lights sighted when making a landfall at night; they normally have the following characteristics:—

(a) *Flashing white* (revolving beam type).

(These lights are usually screened from seaward but their looms may be visible.)

15 or (b) *Alternating flashing white and green* (revolving beam type).

or (c) *Flashing two letter groups* in the Morse Code, in *red* or *green*.

(Although the groups made by these lights may have definite meanings in the International Code of Signals, their signification is to be disregarded; the fact that they are *red* or *green* in colour, and flash with mechanical regularity, should prevent their being mistaken for signals from shore signal stations or ships.)

20 Air lights which appear likely to be visible from seaward will be shown on charts and described in the Admiralty Lists of Lights. As they are subject to changes of which prompt notification to the mariner may not always be possible, care should be taken that they are not confused with marine navigational aids.

MEASURED DISTANCES.—Measured distances have been established as follows:—Between Cap Couronne and Île de Ratoneau; southward of Baie de la Ciotat; in Grande Rade de Toulon; in Rade d'Hyères; between Punta di Celle and Capo Arenzano; off Porto di Genova; between Punta della Chiappa and Punta di Portofino; close southward of Rada di La Spezia; and in Golfo di Napoli.

35 For details, see the body of this volume.

LIFE-SAVING SERVICE.—Lifeboats are maintained at La Nouvelle, Valras-Plage, Grau d'Agde, Sète, Grau-de-Palavas, Grau-du-Roi, Port de Carro, Port Saint-Louis, Cros-de-Cagnes, Bastia, Bonifacio, Ajaccio, and Saint-Florent.

40 A line-throwing apparatus is maintained at Vielle Nouvelle, Nice, Salerno, Pizzo and Gioia Tauro.

BUOYAGE SYSTEMS.—There are two uniform systems of buoyage in use, the "Lateral" system and the "Cardinal" system. They may be used simultaneously and if so used, the transition from one system to the other is indicated by a mark painted red and white or black and white in diagonal stripes, with topmark consisting of a cross and two horizontal bars, painted red or black. In cases where no doubt is possible, transition may be indicated by topmarks as described above added to the limiting marks of the two systems.

50 See diagrams facing pages 14 and 15.

Lateral system.—This system is generally used for marking well-defined fairways.

The term "starboard hand" denotes that side which would be on the right hand of the mariner either going with the main flood tidal stream or approaching or entering a harbour, river or estuary from seaward.

The term "port hand" denotes the left hand of the mariner in the same circumstances. 5

Starboard hand marks are conical, and are painted black or black and white in chequers.

Starboard hand topmarks, if any, consist of black cones, or for purposes of differentiation, except at the entrance to a channel, of black 10 diamonds.

Lights on starboard hand marks, if any, consist of *white flashing* or *white occulting* lights, exhibiting *one, three* or *five* flashes or eclipses; or *green* lights with a character different to those allocated to wreck-marks. 15

Port hand marks are can-shaped and are painted red or red and white in chequers.

Port hand topmarks, if any, consist of red cans, or for purposes of differentiation, except at the entrance to a channel, of red T's.

Lights on port hand marks, if any, consist of *red flashing* or *red 20 occulting* lights, exhibiting *any number* of flashes or eclipses *up to four*, or *white flashing* or *white occulting* lights, exhibiting *two, four* or *six* flashes or eclipses.

The ends of middle grounds are marked by spherical buoys, which are painted in horizontal bands, red and white where the main channel 25 is on the starboard hand, or the channels are of equal importance, and black and white where the main channel is on the port hand.

Middle ground topmarks, if any, when the main channel is on the starboard hand, consist of red cans on the outer marks and red T's on the inner marks. When the main channel is on the port hand, the 30 topmarks, if any, consist of black cones on the outer marks and black diamonds on the inner marks. When the channels are of equal importance, the topmarks, if any, consist of red globes on the outer marks and red St. George's crosses on the inner marks.

Lights on middle ground marks, if any, will as far as possible be 35 distinctive, and neither colour nor rhythm will be such as to lead to uncertainty as to the side on which the marks should be passed.

Mid-channel marks are of distinctive shapes different from the principal characteristic shapes (conical, can and spherical). They are painted in vertical stripes either black and white or red and white. 40

Mid-channel topmarks, if any, are of distinctive shapes other than cone, can or globe.

Lights on mid-channel marks, if any, are different from the neighbouring lights at the sides of the channel.

Isolated danger marks are spherical and are painted black and red in 45 wide horizontal bands separated by a narrow white band.

Isolated danger topmarks, if any, consist of a globe painted black or red, or half black and half red horizontally.

Lights on isolated danger marks, if any, are *flashing*, either *white* or *red*. 50

Fairway marks which serve to indicate the seaward approach to a harbour, river or estuary are similar in shape and colour to mid-channel marks, *see* above.

Lights on fairway marks, if any, are *flashing*.

Buoys on the same side of a channel, estuary or tide-way may be 55 distinguished from each other by names, numbers or letters.

Cardinal system.—This system is used along coasts which are fringed with reefs or isolated dangers. The marks vary in character according to the quadrant of the true compass in which they are situated with reference to the danger which they mark.

- 5 For this purpose the true compass card is divided into four quadrants, called North, East, South and West, which are bounded by the bearings north-east, south-east, south-west and north-west from the danger point.

The quadrant in which the mark lies can be identified by the characteristics of the mark as follows :—

North quadrant :—The buoys are conical, painted black with a wide, white horizontal band in the middle, and are surmounted by two cones points up.

- 15 Lights, if any, are preferably *white quick-flashing* or else *white flashing* or *white occulting* exhibiting an *odd* number of *flashes* or *eclipses*.

East quadrant :—The buoys are conical, painted the upper part red and the lower part white, and are surmounted by two cones bases together.

- 20 Lights, if any, are preferably *red quick-flashing* or else *red flashing* or *red occulting* exhibiting an *odd* number of *flashes* or *eclipses*.

South quadrant :—The buoys are can-shaped, painted red with a wide, white horizontal band in the middle, and are surmounted by two cones points down.

- 25 Lights, if any, are preferably *red flashing* exhibiting an *even* number of *flashes*, or else *red occulting* exhibiting an *even* number of *eclipses*.

West quadrant :—The buoys are can or spindle-shaped, painted the upper part black and the lower part white, and are surmounted by two cones points together.

- 30 Lights, if any, are preferably *white flashing* exhibiting an *even* number of *flashes*, or else *white occulting* exhibiting an *even* number of *eclipses*.

Isolated danger marks and fairway marks are the same as in the Lateral system.

- 35 **Wreck-marking.**—Wrecks may be marked either by the Lateral or the Cardinal system.

Green is the predominant colour used for all purposes connected with wreck-marking, viz :—For vessels, buoys, daymarks, lights, &c., vessels and buoys have the letter **W** and the word "wreck" in the language of the country under whose authority they lie, painted on them in white letters.

Lateral system :—

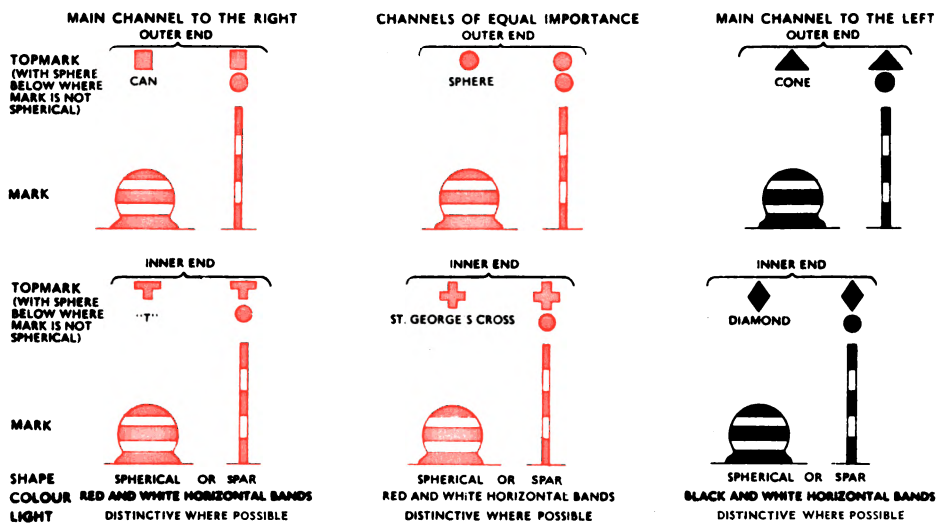
Wreck-marking buoys :—

- (a) To be passed on the mariner's port hand—
45 A can-shaped buoy, and, if lighted, exhibiting a *green flashing* light showing *two* flashes.
(b) To be passed on the mariner's starboard hand—
A conical buoy, and, if lighted, exhibiting a *green flashing* light showing *three* flashes.
50 (c) To be passed on either side—
A spherical buoy, and, if lighted, exhibiting a *green occulting* light showing *one* eclipse.

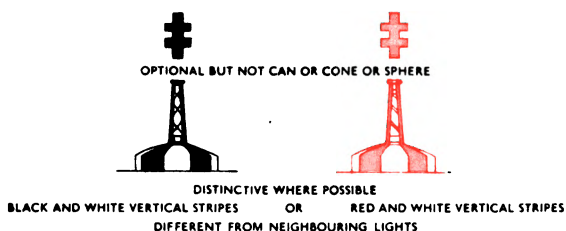
Wreck-marking vessels :—

- I. Lights, exhibited between sunset and sunrise :—
55 (a) To be passed on the mariner's port hand—
Two *fixed green* lights disposed vertically above the hull.

LATERAL SYSTEM

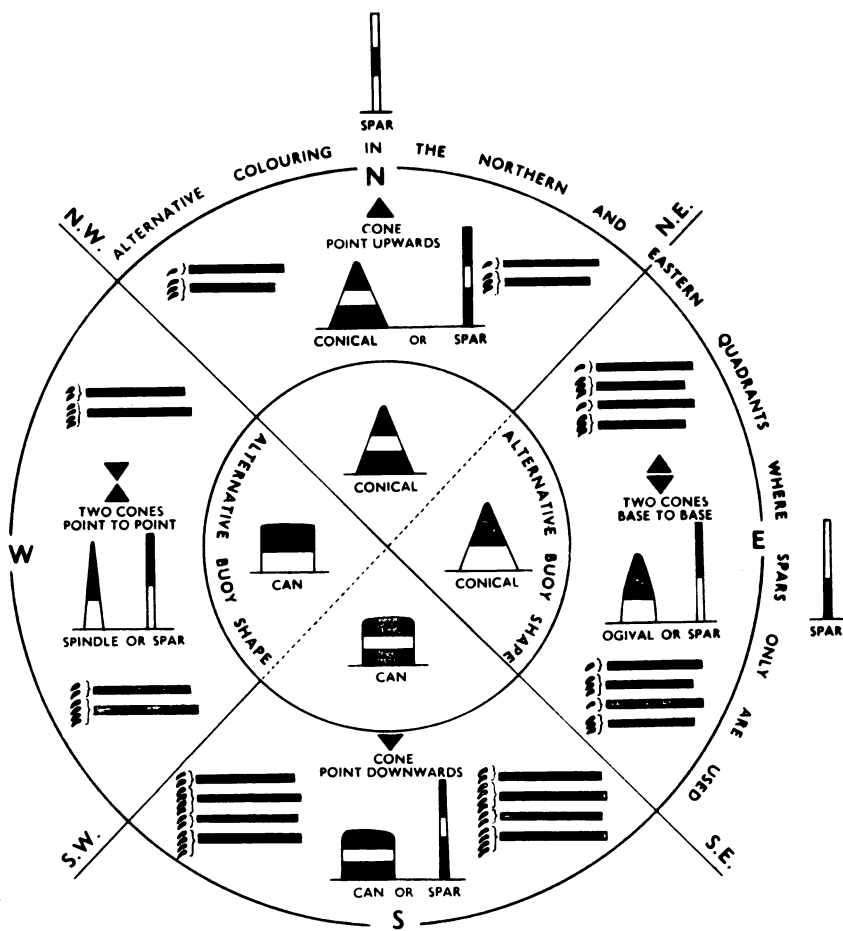


**TOPMARK
(EXAMPLES ONLY)**



DIAGRAMS ILLUSTRATING THE UNIFORM SYSTEM OF BUOYAGE

CARDINAL SYSTEM



NOTE. SLIGHT MODIFICATIONS IN MINOR DETAILS TO THE ABOVE
HAVE BEEN INTRODUCED BY CERTAIN COUNTRIES

DIAGRAMS ILLUSTRATING THE UNIFORM SYSTEM OF BUOYAGE

MARKS COMMON TO BOTH SYSTEMS

AND OTHER MARKS

ISOLATED DANGER MARKS

TOPMARK



MARK



SHAPE

SPHERICAL OR SPAR

COLOUR

WIDE BLACK AND RED HORIZONTAL BANDS
SEPARATED IF DESIRABLE BY A NARROW WHITE BAND

LIGHT

FLASHING (WHITE OR RED)

FAIRWAY MARKS



OPTIONAL (SEE FOOTNOTE)

BLACK AND WHITE VERTICAL STRIPES OR RED AND WHITE VERTICAL STRIPES

FLASHING

TRANSITION MARKS

TOPMARK



MARK



SHAPE

OPTIONAL (SEE FOOTNOTE)

COLOUR

RED AND WHITE DIAGONAL STRIPES OR BLACK AND WHITE DIAGONAL STRIPES

QUARANTINE-GROUND MARKS



OPTIONAL (SEE FOOTNOTE)
YELLOW

OUTFALL AND SPOIL-GROUND MARKS

MARK



SHAPE

OPTIONAL (SEE FOOTNOTE)

COLOUR

YELLOW ABOVE AND BLACK BELOW

AREAS USED FOR NAVAL MILITARY, OR AIR FORCE PRACTICE PURPOSES

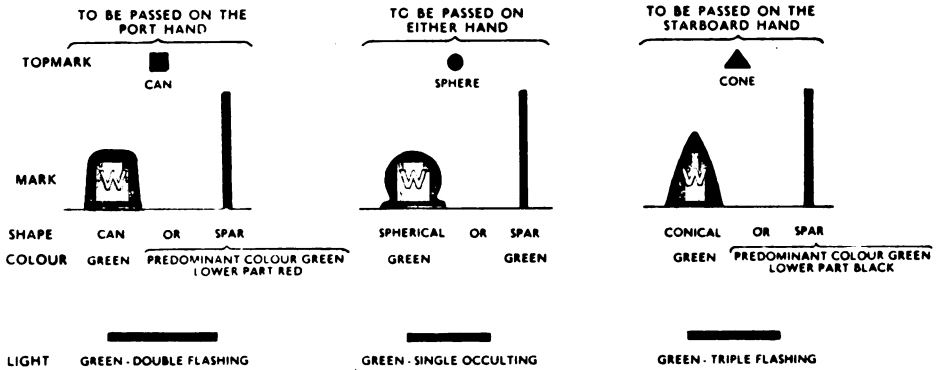


OPTIONAL (SEE FOOTNOTE)
WHITE WITH BLUE CROSS

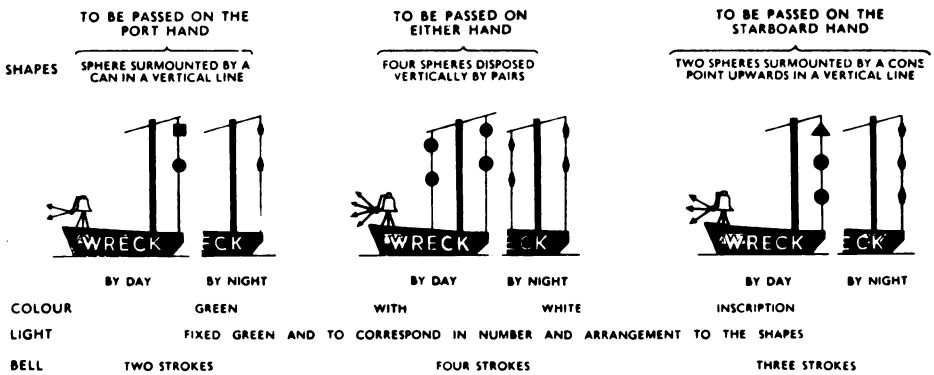
FOOTNOTE: SHAPE IS OPTIONAL AND THE ILLUSTRATIONS ARE TO BE REGARDED AS EXAMPLES ONLY
THE ONLY DEFINITE REQUIREMENT IS THAT THE SHAPE ADOPTED SHALL NOT BE MISLEADING

DIAGRAMS ILLUSTRATING THE UNIFORM SYSTEM OF BUOYAGE MARKING OF WRECKS

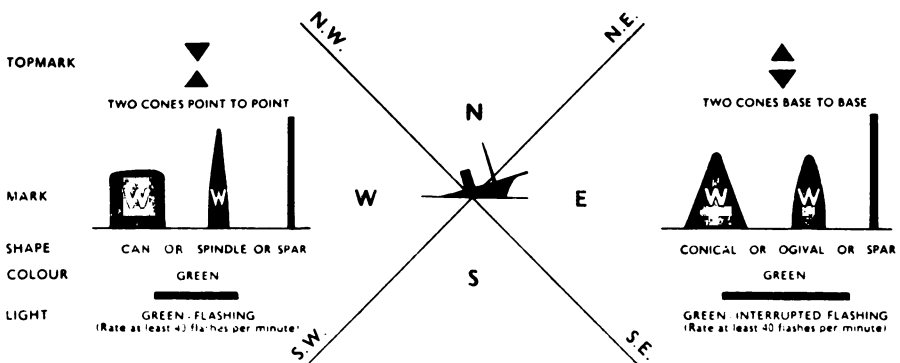
LATERAL SYSTEM BUOYS



VESSELS



CARDINAL SYSTEM



(b) To be passed on the mariner's starboard hand—
Three *fixed green* lights, disposed vertically above the hull.

(c) To be passed on either side—
Four *fixed green* lights placed in pairs on each end of a crossyard; the lights of each pair being disposed vertically above the hull. 5

Note.—The ordinary riding light for a vessel at anchor is not exhibited.

II. Shapes.—Between sunrise and sunset green balls or shapes corresponding in number and arrangement to the *green* lights. 10

III. Fog signal, rung on a deep-toned bell at intervals of not more than 30 seconds.—

(a) To be passed on the mariner's port hand—2 *strokes* in succession. 15

(b) To be passed on the mariner's starboard hand—3 *strokes* in succession.

(c) To be passed on either side—4 *strokes* in succession.

Cardinal system.—Under this system, wreck marks are placed only in the East or West quadrants and have the following characteristics:— 20

East quadrant marks are conical, painted green, and are surmounted by two cones bases together.

Lights, if any, are *green flashing*, exhibiting groups of *quick flashes* separated by periods of eclipse. 25

West quadrant marks are can or spindle-shaped, painted green, and are surmounted by two cones points together.

Lights, if any, are *green flashing*.

Caution.—In both systems, if buoys of the principal characteristic shapes (i.e. conical, can and spherical) are not available, buoys of other shapes or spar buoys may be used in their places. Such buoys will be painted in a similar manner to the marks they replace and, if lighted, will exhibit lights with similar characteristics. 30

French system of buoyage.—The Lateral and the Cardinal systems are both in use in French waters. 35

Italian system of buoyage.—The Lateral and the Cardinal systems are being brought into use gradually in Italian waters, but as the change over may take some time to complete, the old Italian system may still be found in use in some places; in such places, details of the buoyage will be found in the body of this volume. 40

PILOTAGE.—France.—Pilotage into and out of French ports is compulsory for all vessels of 100 tons and over.

The purport of the principal articles of the French law as regards pilotage is as follows; the remaining regulations should be ascertained on the arrival of the pilot. 45

Immediately on entering any area in which pilotage is compulsory the signal for a pilot must be displayed and must be kept flying until the arrival of the pilot. These areas are described in the body of this volume. 50

On the arrival of the pilot, every facility must be afforded him for boarding the vessel under the best conditions possible.

The master of the vessel must supply the pilot with the following information: the draught of the vessel; the maximum speed of the vessel; and the manœuvring qualities of the vessel. 55

The signals for a pilot are those laid down in the International Code of Signals.

The master must accept the services of the first pilot who presents himself, or those of the pilot whose turn it is as shown by the register
5 of the pilot station.

The master of a vessel intending to leave any port must give sufficient warning to the pilot station, in default of which he will be considered as having endeavoured to evade pilotage, and will be liable accordingly.

With certain exceptions, pilot vessels are painted black with a white
10 band, and have the initial letters of the name of their station inscribed in white on either bow and quarter, and an anchor painted on either side of the funnel.

Italy.—Licensed pilots are available at the more important Italian ports and harbours, *see* the body of this volume.

15 A vessel requiring a pilot should display the signals laid down in the International Code of Signals.

STANDARD AND SUMMER TIMES.—All information regarding Standard Times and Summer Times will be found in the Admiralty List of Radio Signals, Vol. II.

20 **COMMUNICATIONS.**—All the towns and the majority of the villages along the coast in the areas covered by this volume are connected with the general railway system; they are also connected with the general telegraph and telephone systems.

For communications by sea, *see* under descriptions of the various
25 ports.

Air stations, at which air-liners call regularly, which lie in the close vicinity of ports, are mentioned under the description of those ports.

Radio stations.—Coastal radio stations in the area covered by this volume, which are open for public correspondence, are:—

30 **France.**—Grasse; Marseille.

Italy.—Genova; La Spezia; Rome; Napoli; and Taranto.

For details, *see* List published by the General Secretariat of the International Telecommunication Union.

For details of radio stations which transmit weather bulletins, storm
35 signals, navigational warnings, time signals, etc., *see* Admiralty List of Radio Signals.

FUEL.—Coal can be obtained at Ajaccio, Castellammare di Stabia, Genova, Imperia, Livorno, Marseille, Napoli, Savona, Sète, La Spezia and Taranto.

40 Fuel oil can be obtained at Ajaccio, Genova, Livorno, Marseille, Napoli, Port-de-Bouc, Saint-Louis-du-Rhône, Sète, La Spezia and Vado.

Diesel oil can be obtained at Genova, Marseille, Napoli and Vado.

DOCKYARDS.—Naval dockyards and establishments exist at Toulon, Genova, La Spezia, Napoli, Castellammare di Stabia and
45 Taranto.

For list of largest docks and patent slips, *see* Appendix I, page 519.

MINED AREAS.—Caution.—Vessels navigating in those waters which are declared danger areas owing to the existence of mines should keep strictly to the directions contained in NEMEDRI. This publi-
50 cation gives routes through these declared danger areas and all information required for their safe navigation.

SUBMARINE CABLES.—The following Articles are extracted from the International Convention for the Protection of Submarine Telegraph Cables of 14th March, 1884 :—

II. It is a punishable offence to break or injure a submarine cable, wilfully or by culpable negligence, in such a manner as might interrupt or obstruct telegraphic communication, either wholly or partially, such punishment being without prejudice to any civil action for damages. 5

This provision does not apply to cases where those who break or injure a cable do so with the lawful object of saving their lives or their vessel, after they have taken every necessary precaution to avoid so breaking or injuring the cable. 10

V. Vessels engaged in laying or repairing submarine cables shall conform to the regulations as to signals which have been, or may be, adopted by mutual agreement between the High Contracting Parties, with the view of preventing collisions at sea. 15

When a vessel engaged in repairing a cable exhibits the said signals, other vessels which see them, or are able to see them, shall withdraw to, or keep beyond, a distance of one nautical mile at least from the vessel in question, so as not to interfere with her operations. 20

Fishing gear and nets shall be kept at the same distance.

Nevertheless, fishing vessels which see, or are able to see, a telegraph ship exhibiting the said signals, shall be allowed a period of 24 hours at most within which to obey the notice so given, during which time they shall not be interfered with in any way. 25

The operations of the telegraph-ships shall be completed as quickly as possible.

VI. Vessels which see, or are able to see, the buoys showing the position of a cable when the latter is being laid, is out of order, or is broken, shall keep beyond a distance of one quarter of a nautical mile at least from the said buoys. 30

Fishing nets and gear shall be kept at the same distance.

VII. Owners of ships or vessels who can prove that they have sacrificed an anchor, a net, or other fishing gear in order to avoid injuring a submarine cable, shall receive compensation from the owner of the cable. 35

In order to establish a claim to such compensation, a statement, supported by the evidence of the crew, should, whenever possible, be drawn up immediately after the occurrence ; and the master must within twenty-four hours after his return to or next putting into port, make a declaration to the proper authorities. 40

The latter shall communicate the information to the Consular authorities of the country to which the owner of the cable belongs.

Caution.—Cautionary notes appear on many charts, calling attention to areas in which there are submarine telegraph cables ; these areas are indicated by pecked lines on the charts. Every care should be taken to avoid anchoring in such areas, even though there may be no specific prohibition against doing so, in view of the serious interference with communications which results from damage to submarine cables. Equal care should be taken wherever the symbol for a submarine cable (a wavy line) is shown on a chart. 45 50

Danger involved in cutting cables to clear anchors or fishing gear.—In the event of any vessel fouling a submarine cable, every effort should be made to clear the anchor or gear by normal methods ; should these efforts fail, the anchor or gear should be slipped and abandoned *without attempting to cut the cable.* High voltages are, or 55

may be, fed into certain submarine cables ; serious risk exists of loss of life, or at least of severe burns, due to electric shock if any attempt to cut the cable is made. No claim in respect of injury or damage sustained through such interference with a submarine cable will be entertained.

- 5 Compensation for anchors or fishing gear sacrificed in order to avoid injuring a submarine cable can be claimed under the Submarine Telegraph Act, 1885 (Schedule of Submarine Telegraph Convention, Article VII).

REGULATIONS.—Harbour regulations are enforced at all the more important ports and harbours in the area covered by this volume ; their tenor should be ascertained on arrival, and they should be readily complied with.

Quarantine.—Deratisation.—Quarantine regulations are enforced at all the major ports in the area covered by this volume. Inter-
15 national Quarantine messages can be sent by radio to certain ports in Italy, for details, *see* Admiralty List of Radio Signals. These messages can in no case take the place of the customary visit of the Health authorities.

In accordance with Article 28 of the International Sanitary Convention of 21st June 1926, Deratisation can be carried out and Deratisation Exemption Certificates can be issued, to vessels at Sète, Marseille, Savona, La Spezia, Livorno, Napoli and Taranto ; also, in cases of emergency, at Nice, Port-de-Bouc, Saint-Louis-du-Rhône and Toulon.

25 **Approaching French territorial waters in time of war.**—Decree of 1st October 1934. In time of war the conditions under which vessels, other than French war vessels, may enter and remain in ports and anchorages of France, her colonies, protectorates and mandated territories, are governed by the following regulations.

30 2. No French merchant vessel, nor foreign man of war or merchant vessel, may approach within 3 miles of the coast in the territorial waters of France, her colonies, protectorates, and mandated territories, without permission, without running the risk of being destroyed.

The prohibited zone is extended to 6 miles * from the coast off the various naval ports ; off Toulon it is limited to the westward by the meridian of Bec de l'Aigle and to the eastward by the meridian of Cape Bénat.

3. Every vessel affected by the present decree must hoist her national flag on approaching the prohibited zone, and also her number in the
40 International Code of Signals ; at night, she must show her navigation lights.

If desirous of entering the prohibited zone in order to reach a port, permission must be asked as follows :—

By day, by hoisting the pilot flag (flag G of the International Code of
45 Signals), accompanied, if possible, by the signal PT of the same code (a pilot is required) made in Morse code by searchlight.

At night by making the signal PT (a pilot is required) in Morse code, followed by her number in the International Code of Signals, or, if she has no means of doing this, by making the night signal for a
50 pilot as laid down in the International Code of Signals, viz., a *white* light flashed or shown just above the bulkheads at short or frequent intervals for *about a minute* at a time, accompanied if necessary by a *blue* light every fifteen minutes.

* NOTE.—The British Government does not recognise claims to jurisdiction outside the three-mile limit of territorial waters.

The vessel must remain outside the zone until she has received a reply from a signal station or an examination vessel.

The reply from the signal station or the examination vessel is made as follows :—

Entry permitted :

By day, by searchlight, the letters UI in Morse code repeated three times, or flags UI of the International Code of Signals.

At night, by searchlight or flashing light, the letters UI in Morse code repeated three times, or by a *white* Very's light.

Entry forbidden :

By day, by searchlight, letters UJ in Morse code repeated three times, or by the flags UJ of the International Code of Signals.

At night, by searchlight or flashing light the letters UJ in the Morse code repeated three times, or by a *red* and *green* Very's light.

If permission is granted, the vessel must enter the prohibited zone at a reduced speed, displaying by day flag G of the International Code of Signals, and at night exhibiting her navigation lights, and must steer for the examination vessel. The latter has normally no distinguishing marks, but, if she wishes to show vessels in sight that she is engaged on examination duties, she displays at the masthead a black ball by day and exhibits a *red* light at night, or, alternatively the letters MAJ repeated three times in Morse code by flashing light.

If entry be refused, the visiting vessel must immediately alter course and proceed for some other anchorage.

4. Between sunset and sunrise, all vessels affected by the present decree are forbidden to ask to enter the prohibited zone off Toulon, defined in Article 2.

Unless a captain has received authorisation from the Naval authorities, he may not ask permission to enter this zone, except when his vessel is in danger and is absolutely unable to remain in the open sea until dawn, or to reach any other anchorage.

In this case, the distress signals laid down in the International Code of Signals must be made.

5. In foggy weather every vessel affected by the present decree desirous of entering the forbidden zone is to hoist the same signals as in clear weather and sound blasts on the whistle or siren until permission to enter has been given by an examination vessel.

Entry into the prohibited zone off Toulon, defined in Article 2, is forbidden in foggy weather under the conditions specified in Article 4.

6. Every vessel affected by the present decree must immediately comply with the orders of a vessel of war or examination vessel, or a signal station given by voice, the International Code of Signals, or by a warning gun.

Any vessel warned by a battery or vessel of war must immediately alter course by more than eight points (90°) and steer so that she remain in sight of signals from the vessel of war or signal station nearest to the battery that warned her. She may not proceed on her former course until authorised to do so.

If the vessel does not alter course after a blank charge has been fired to warn her, a live shell will be fired a few minutes later, and if a vessel does not immediately conform to this order, effective fire will be opened on her.

In cases of emergency the blank charge may be omitted.

At night the warning shot with live shell may also be omitted, and

every vessel entering the forbidden zone without permission is liable to be destroyed without preliminary warning.

7. Vessels authorised to enter roads and ports in France, or in the French colonies, protectorates or mandated territories, must keep 5 strictly within the approach channel.

For this purpose they will be piloted by a vessel set apart for this duty. Should a port have no pilotage vessel, the examination vessel will send a pilot on board the visiting vessel.

Vessels must take up the berths assigned to them and conform 10 strictly to the special regulations in force.

The length of stay of a vessel will depend on military considerations, and when circumstances require it a vessel may be ordered to put to sea or to move to a determined point ; such order must be carried out without delay, though respite may be allowed to vessels really unable 15 to conform to it immediately.

No vessel is to get under way, either to shift berth or to quit the roads without the permission of the local authority ; a request may be made by hoisting flag G of the International Code of Signals.

8. In naval roads and ports, between sunset and sunrise, the move- 20 ment of boats, other than those of French vessels of war, is absolutely forbidden.

From sunrise to sunset, movement is only allowed to boats which have received a special permit from the naval authorities and the means of making themselves recognisable.

25 Boats with permits should steer clear of vessels of war if ordered to do so, and must not in any case go alongside the latter without their permission. The movement of these boats will moreover remain subject to local regulations, notably those relative to the prohibition to enter certain parts of the roadstead, and to go alongside at any other 30 place than those expressly notified.

In commercial ports similar measures will be taken by the local authority to impose the restrictions judged necessary on the movements of boats, due consideration being given to the interests of commerce.

9. Visits by neutral vessels of war are governed by the decree of 29th 35 September, 1929, so far as notification or previous authorisation is concerned, the regulations for entry being governed by the present decree.

10. The measures provided for by the present decree are to come into force on mobilisation or on special notice.

11. Any infraction of the present decree will lead to such repressive 40 measures as circumstances admit of, in addition to the risks of destruction incurred.

Temporary closing of French ports.—Access to French ports may be prohibited, or subject to certain regulations, on account of Naval manœuvres, exercises or other causes.

45 In such cases a warning signal consisting of three balls, disposed vertically, by day, and, at night, three *red* lights, similarly disposed, will be displayed from a conspicuous position. These signals will also be displayed by the watch vessels.

A vessel wishing to enter or leave French waters when this signal 50 is displayed shall, by day, hoist the pilot flag, or, at night, burn flares and sound blasts on the siren or whistle, and await the arrival of a watch vessel.

If a watch vessel hails, or fires a round at, a vessel, the latter must immediately stop or heave to.

55 Should occasion arise, vessels arriving will submit to a visit from the watch vessel, who will give the following information :—

(a) If a special examination service is established, and in what place it is to be found.

(b) If the entry to the port is closed, and for how long.

(c) If there are any special directions for navigating within a certain area.

5

Vessels leaving the port will receive their instructions from the port authorities.

Masters of vessels not complying with these regulations do so at their risk and peril, and are liable for any damage they may cause.

Regulations concerning vessels carrying inflammable liquids in Italian waters.—The following regulations are in force in Italian waters :—

10

1. Vessels carrying inflammable materials must secure in the appropriate berths, and must exhibit in a conspicuous position, by day, a red flag, and at night, a *red* light. Such vessels must also have the funnel covered by a spark-proof net, and the masts, or at least the tallest one, provided with an efficient lightning conductor.

15

Tank vessels may only use safety lamps or electric light ; whilst taking-in or discharging, the lighting of fires, smoking, etc., is prohibited in or near the place where the inflammable liquid is stored.

20

2. Whilst taking-in or discharging inflammable liquid, every endeavour must be made to prevent leakage, and special care must be taken to prevent any benzine, petroleum, or naphtha running into the sea.

3. Immediate notice must be given to the maritime authorities of the presence on the surface of the sea of any benzine, petroleum, or naphtha, lost, either from the vessel or the pipe-line, during the operations of taking-in, discharging, or working.

25

4. All vessels using liquid fuel are forbidden to pump water overboard from the bilges whilst in port or in the vicinity of the coast.

30

5. The discharge is forbidden, either in harbour or in the vicinity of a harbour, of any water used for washing hoses or for clearing away inflammable liquid, either from tank vessels, or from shore depots, except in the latter case where there are no means of separating the two liquids. On tank vessels, the water used for general purposes must be kept on board until it can be deposited in the open sea. Whenever, through the exigencies of the service, it is necessary to discharge such water, either in port or while adjacent thereto, it must be done by means of a special lighter, which can later be emptied at sea.

35

6. Sea water used onboard must be evacuated at such a distance from the harbour that there shall be no possibility of the return of any benzine, petroleum, or naphtha.

40

Note.—Local exigencies may demand, in addition to the foregoing rules, such other regulations as may be enforced by the particular harbour authority after notification by special ordinance.

45

Approaching Italian ports.—Sailing vessels, boats, under steam or otherwise, and tugs or other small craft within a radius of one mile of the entrance to, or within the waters of, Italian ports, or in channels, estuaries and rivers in Italian territory, must keep clear of all steam vessels entering or leaving. Steam vessels observing a breach of these regulations should give not less than four short blasts on their whistles or sirens.

50

Steam vessels navigating in the above areas should do so with caution and at a reduced speed.

Arrival and departure of Italian seaplanes.—When seaplanes are arriving, departing, or exercising in certain Italian ports signals

55

to indicate that these manœuvres are taking place are displayed in the vicinity. Vessels are prohibited from entering or leaving harbour or shifting berth while these signals are displayed. If however the vessel is already under way in the harbour, entering, leaving, or shifting
5 berth, it is the seaplane which must delay her arrival or departure until the area reserved for her is clear.

Craft of all descriptions must on all occasions leave seaplanes a clear course if it is possible to do so.

10 Details of the reserved areas and the signals displayed will be found in the description of the ports affected.

CLIMATE AND WEATHER.—General conditions.—Articles 1, 3 and 4 of the General Meteorology section of the preliminary pages affect this volume.

In the area covered by this volume the summers are hot and rather
15 dry, with very little cloud, the winters normally mild, but occasionally cold in the north. The annual rainfall is generally moderate, and mostly occurs between September and May, with October or November the wettest months.

In the north gales may blow in any month, and are fairly common
20 from November to May. They are especially frequent in the Gulf of Lions, where, from December to February, they blow on nearly one day in three. In the south they are fairly common from November to March, but rarely occur from June to October.

Visibility is mainly good at sea, but coastal mist or fog is not
25 uncommon on winter mornings in the north, particularly in smoky industrial regions.

Pressure.—Throughout the year, a semi-permanent area of high pressure, known as the Azores anticyclone, lies to the westward of the Mediterranean. In winter another semi-permanent anticyclone lies
30 to the eastward over Asia, and separating the two systems there is an area of relatively low pressure (about 1016 mb.) centred off the west coast of Italy. In summer there is a progressive decrease of mean pressure from west to east across the whole of the Mediterranean, towards the large area of low pressure which in that season covers
35 Arabia and northern India; mean pressure is then rather low over the Sahara.

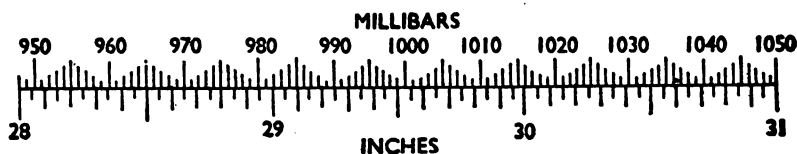
Over most of the region covered by this volume, mean pressure is highest (about 1017 mb.) in January and lowest around April (1012 mb.—1013 mb.).

40 From November to April, depressions (*see* standard article on "Lows," page xxxvi) are frequent over the western and central parts of the Mediterranean. Some come from the Atlantic across southern France and Spain, or through the Strait of Gibraltar, others form over the Mediterranean itself, especially in the Gulf of Lions and Golfo di
45 Genova. The majority move eastward near the northern shore, and are apt to linger for a few days in the neighbourhood of Golfo di Genova, subsequently moving south-eastward. Many depressions also pass down the Adriatic in these months.

In summer and early autumn, depressions are much fewer and less
50 intense, but there are a few of the type that is common in winter; these also are apt to linger in the vicinity of Golfo di Genova, and mostly fill up over northern Italy or move away north-eastward, although a few move down the Adriatic. In some summers, the northern part of the region covered by this volume has frequent
55 strong north-westerly winds, due to depressions of the winter type over

northern Italy, but in most parts of the region, especially near the coast, shallow local depressions, imperceptible in the isobars of the ordinary synoptic charts, produce the strongest winds of this season over the limited area which they control.

The accompanying diagram shows the equivalent of inches in millibars, and vice versa. 5



General character of the wind 20 miles or more from the coast.—*North of about latitude 41° N.*, the direction of the wind is very variable, and there is no predominant direction, with the following exceptions:—

- (1) Over the Gulf of Lions, the Ligurian Sea and Golfo di Genova, from November to March, rather more than half of all winds are from west, north-west, north or north-east; winds from east and south-east are very infrequent in those months.
- (2) Between Corsica and Italy, from May to August, more than a third of all winds are from north-west or west. 10 15

Winds of Beaufort force 7 or more are most frequent in the Gulf of Lions, where they blow on nearly 1 day in 3 from December to February, and even in the least windy period from July to September on about 2 days per month. They decrease in frequency progressively eastward, and between Corsica and Italy occur on only three to four days per month from November to March, and are rarely experienced from June to August. 20

South of about latitude 41° N., from December to September, winds from between west and north are rather frequent, and from June to August, more than half of all winds are from that quadrant. In October and November winds from all directions are about equally 25

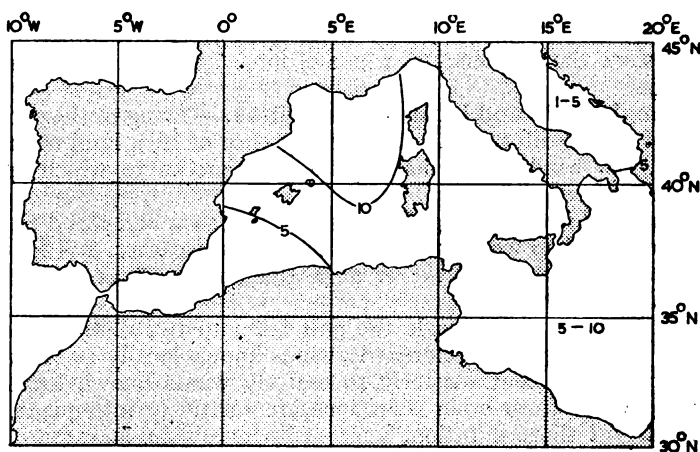


Fig. 1.

PERCENTAGE FREQUENCY OF GALES (FORCE 7 AND ABOVE) JANUARY.

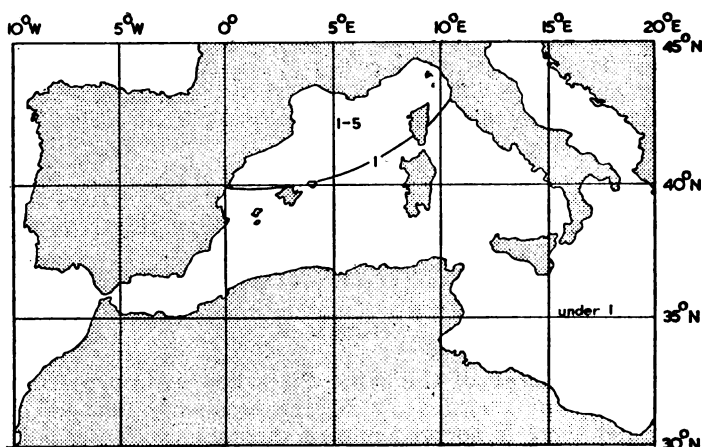


Fig. 2.

PERCENTAGE FREQUENCY OF GALES (FORCE 7 AND ABOVE) JULY.

Table for converting percentage frequency of gales to gale days per month.

For the area covered by the chart, the table gives the average number of gale days per month corresponding to any given percentage frequency. For example, along the 10 contour, $6\frac{1}{2}$ gale days a month, on an average, may be expected.

| | | | | | | |
|--|----|----|----------------|----------------|----|----|
| Percentage frequency of gales . . . | 1 | 3 | 5 | 10 | 15 | 20 |
| Average No. of gale days per month . . | 1 | 2 | $3\frac{1}{2}$ | $6\frac{1}{2}$ | 9 | 12 |
| Percentage frequency of gales . . . | 25 | 30 | 35 | 40 | 45 | 50 |
| Average No. of gale days per month . . | 14 | 16 | 18 | 20 | 21 | 23 |

frequent, except those from east and south-east which are very uncommon.

Wind reaches force 7 or more on about three to four days per month from December to February, and on one to two days per month in November and March, but very seldom from June to October. Figs. 1 and 2 show the frequency of winds of force 7 and above in January and July.

Regional winds and local coastal winds.—Owing to the enclosed nature of the Mediterranean and the presence of high land on nearly all sides, the winds have many local peculiarities to which special names have been given.

The Gulf of Lions.—This gulf, between Cap Creux and Îles d'Hyères, is notorious for bad weather, sudden changes of weather, and for large differences between the weather at a given moment at places only a few miles apart.

The prevailing winds inside the gulf fall into two distinct groups, namely, north-westerly to northerly winds known locally as Mistral or Tramontana, and south-easterly to easterly winds known locally as Marins. Winds from other directions are relatively infrequent, and are usually of short duration.

Of these two prevailing winds the north-westerly predominates very decidedly at nearly all places inside the gulf, especially in the winter, and more so west of Marseille than in the eastern part of the gulf. It

is also more prominent at sea than near the shore during the day time, owing to the sea-breeze effect (*see* standard article on "Local modification of the weather near the coast," page xlix). Towards the eastern limits of the gulf the proportion of easterly winds increases decidedly, until at Île du Levant they are slightly the most frequent at most times of the year. 5

The sudden changes of wind for which the gulf is so well known are generally due to the passage of cold fronts associated with depressions. Large differences from place to place are more often due to the contours of the adjacent land. 10

The Mistral is characteristically a fresh or strong wind, and so is the Marin, especially near Île du Levant, where it is an easterly wind. In consequence, the wind in the gulf reaches or exceeds force 5 (17 knots) on more than one day in three during the winter, and gales or strong winds are also very frequent. 15

North-easterly winds are frequent as light or moderate nocturnal land breezes at some places on the coast. North-easterly gales, known as "gregale," occur on rare occasions when a deep depression lies to southward, but very seldom last for more than 24 hours. They may, however, raise a very heavy sea locally, especially on the western 20 shores of the gulf, although not in Golfe de Marseille. The land is often obscured during these gales.

The chief change of wind direction from winter to summer is a decrease of winds from northerly points, and an increase of those from southerly points. 25

The Mistral is a north-westerly or northerly wind of marked individuality. In this gulf it is notable for its strength, frequency, and dry coldness, and it often has a speed and direction very different from the wind that might be expected from the pressure gradient shown on the synoptic charts. It is strongest between Marseille and Perpignan, 30 with a definite intensification in and off the Rhône delta, where the local Mistral of the Rhône valley, which blows from a northerly direction, may be superposed on general Mistral conditions. The distance seaward to which the strong winds extend is variable; when the local Mistral alone is blowing they may not extend more than five to ten 35 miles from the coast; widespread Mistral may, however, be continued to the African coast and to Malta. During a strong Mistral, violent squalls are liable to sweep down the leeward slopes of mountains; such squalls blow frequently down Bec de l'Aigle.

The strength and frequency of the Mistral falls off eastwards of 40 Marseille to Golfo di Genova, and south-westwards from Perpignan to Rio Ebro, in Spain. At Marseille it is said to blow on an average on 110 days in the year, whereas at Nice it is comparatively infrequent.

Observations at Perpignan, Sète, Montpellier, Nîmes, Montélimar and Marignane during 1924-7 gave the average frequencies of days of 45 strong Mistral (*see* Table on page 26).

There is a decided diurnal variation in the speed of the Mistral on the coast in winter, the maximum speed during the day generally averaging about double the minimum during the night; there are also considerable local variations of direction due to topography. 50

The duration of the Mistral is commonly from three to six days, but ranges from a few hours to 12 days or more. It often happens during a prolonged Mistral that the wind backs westward and moderates, then veers again with a renewal of the Mistral. On an average, out of every four cases of strong Mistral one lasts for three or more 55 days,

Number of days per month of strong Mistral.

| Speed (knots) | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year |
|--|------|------|------|------|-----|------|------|------|-------|------|------|------|------|
| Strong Mistrals at one or more of six stations | | | | | | | | | | | | | |
| 21 to 27 . | 11 | 9 | 13 | 11 | 8 | 9 | 9 | 7 | 7 | 5 | 7 | 11 | 103 |
| 28 to 32 . | 8 | 6 | 10 | 9 | 6 | 4 | 4 | 3 | 2 | 2 | 3 | 7 | 64 |
| 33 to 40 . | 4 | 4 | 6 | 5 | 3 | 2 | 1 | 1 | 1 | 0 | 0 | 4 | 30 |
| over 40 . | 2 | 2 | 2·5 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 2 | 11 |
| Strong Mistrals at three or more stations | | | | | | | | | | | | | |
| over 20 . | 2 | 2 | 2·3 | 2 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 2 | 14 |

Note :—The monthly figures are approximated to the nearest whole number, consequently their totals differ somewhat from the figures given under "Year."

Conditions that favour a widespread Mistral over the western Mediterranean are a strongly developed north-eastward extension of the Azores anticyclone, with a depression centred over or near to Golfo di Genova. In these circumstances it begins with the arrival of the primary, cold front. The wind rises quickly; later on it may lull, but it increases again with the passage of each succeeding secondary cold front.

The Mistral almost always brings a very marked fall of temperature, and in southern France in winter and early spring is disliked as much for this as for the violence of the wind. It is usually dry, and is normally accompanied by lightly or moderately clouded sky. Its arrival may be accompanied by a violent squall, thunder and heavy rain, but thereafter rain is uncommon except at the passage of secondary cold fronts. Snow sometimes replaces rain in winter. The type of Mistral which brings recurrent squalls and rain or snow is known locally as "Mistraou bru."

The Marin is a strong wind in the Gulf of Lions, blowing from a south-easterly direction. It is associated with depressions, and is generally a warm damp wind, accompanied by rain and thick weather. Although not so violent as a strong Mistral, it often raises a heavy sea, especially on the western coast of the gulf. The accompanying landward set of the current and obscuration of the coast are dangerous to vessels.

The Marin is more frequent in the northern part of the gulf than in the southern, but sometimes in winter, especially when the mountains are covered with snow, the strong wind does not reach the coast. There, the breeze is light, from north-westward or north-eastward. At these times the sky may be clear overhead on land, while the heavy swell, and the cloud masses on the southern horizon, indicate bad weather at sea. A strong Marin always gives the squalls which tend to form on steep leeward slopes in a strong wind, e.g., in such places as the northern coast of Île de Port-Cros.

The direction from which the Marin blows on the coast depends much on local topography; it is generally from between south-east and south-west, but is more often easterly in the eastern part of the gulf.

The frequency and duration of south-easterly gales are much below those of the Mistral, although when of moderate strength the Marin may be very persistent. The south-easterly gales blow ahead of

depressions moving eastward or north-eastward from southern France or northern Spain. They often end with a cold-front squall from between south-west and north-west, accompanied by rain in summer, and hail in winter. When the depression is farther south the gale may die away, or back north-eastward and strengthen if the depression moves eastward along a track well to the south of the gulf. 5

The French Riviera.—This region is taken to extend westward as far as Îles d'Hyères. It is one of transition from the stormy conditions in the Gulf of Lions to the better weather between Nice and Genova. In general, its characteristic winds are from between west and north-west and from east. Strong winds and gales decrease in frequency eastward along the coast, their number at the eastern limit being only about half that at the western. There is a well-marked diurnal variation in their average speed, the maximum being during the day. 10-

The prevailing wind direction varies according to local topography. The Mistral is much less common than in the Gulf of Lions, and both its frequency and duration fall off progressively eastwards, but even so it is a noticeable feature of the climate; its dry coldness is well known all along the coast to Nice. Its direction in this region is usually westerly or north-westerly. Winds of similar character, however, occasionally blow from as far round as south-west near Nice, and periods of exceptional cloud are at times brought by north-easterly winds. At the mouths of valleys opening southward to the sea, for example in Baie de Villefranche, there are, during conditions favourable for a Mistral, very strong winds blowing offshore, even when the wind is only light or moderate at neighbouring places on the coast. 15 20 25

Over the open sea off the French Riviera, winds from between north-west and north-east are the most frequent in winter, and most of the strong winds are from these directions. Winds from southerly points are relatively few. 30

The principal changes from winter to summer are as follows: South-westerly winds increase decidedly, especially in the east. Northerly winds decrease and westerly winds increase at Cap Sicié and Île du Levant. The general prevailing winds on the coast continue to be easterly and westerly. 35

On the shipping route southward of the French Riviera, the winds in summer are chiefly from between south and north-west, but there are also a good many easterly winds. Strong winds are few, and are nearly all from between south-west and north-west; it is calm on about one day in five. The very moist southerly Scirocco (see page 32) blows occasionally. 40

Northern coast of Corsica.—Westerly to south-westerly winds, known as the "Libeccio," are the predominating winds throughout the year, with a maximum in summer; when strong they raise a very heavy sea on the coast between Île de Gargalo and Cap Corse. 45

The eastern coast of the Cap Corse peninsula is only partly sheltered from these winds, for between Cap Corse and Bastia the force of the wind, at the openings of some of the valleys, is much increased, and violent squalls descend from the mountains, sometimes even when there is only a moderate westerly breeze on the west coast. At the base of the mountains, and especially at Bastia, these squalls are violent, and, in summer, hot and withering. Bastia and Macinaggio appear to be the two places on this section of the east coast where the Libeccio is most violent; elsewhere its effects are quite local, and vessels driven to sea by it have often found a moderate wind about ten miles off-shore. 50 55

The westerly wind is always preceded by a low barometer, and a rise of the sea level. While it is blowing, stationary clouds, known locally as "Balles de coton," generally cover the mountains.

Occasionally the wind shifts north-westward and the Mistral sets in, but this does not often happen. A northerly wind generally shifts north-eastward and becomes a Tramontana, with a high barometer. In winter a Libeccio gale with a low barometer is often followed by a north-easterly gale when the barometer begins to rise. When there is snow on the mountains the wind generally moderates near the coast.

In winter south-easterly winds are almost as common as south-westerly winds, but their frequency decreases notably in summer. They produce much the same effect on the west coast as the Libeccio does on the east coast, but the squalls are not quite so violent.

Eastern coast of Corsica southward of Bastia.—In winter the winds on this coast fall into two main groups, westerly and north-easterly to easterly. The force of the westerly winds is much diminished southward of Bastia; they are, however, apt to be strong in the early winter and cause violent local squalls off the mouths of valleys that open eastward, for example in Golfe de Porto Nuova. When they veer northward the wind generally remains strong and causes heavy seas.

Southerly winds are comparatively rare and are generally of short duration.

Easterly winds are dangerous, and when strong cause a heavy sea on this shelterless coast.

In summer westerly winds are more persistent but much less strong; easterly winds fall off both in frequency and strength, and the sea is generally slight.

Southern coast of Corsica.—In winter, in Bonifacio strait, strong winds approaching gale force are very liable to blow from westward or from eastward during the eastward passage of depressions to northward or southward, respectively. Westerly winds are north-westerly at the western and south-westerly at the eastern end of the strait, while the easterly winds tend to be north-easterly at the western and south-easterly at the eastern end. South-westerly gales at the western end are rather rare, but the frequent north-westerly gales are usually preceded by south-westerly winds which become strong, without reaching gale force, before veering north-westward.

The easterly winds are little felt in the western part of the strait, but may cause a choppy sea between Bonifacio and Pointe de Sénétosa.

In summer the easterly winds decrease in frequency and strength, and the predominant wind is westerly; the sea in the strait is generally slight.

Western coast of Corsica.—The winds on this coast in winter are generally either westerly to north-westerly or easterly, the easterly winds being slightly the more frequent, but the least strong.

Île de Gargolo, at the north-western extremity of Corsica, is a dividing point for the westerly wind, which is generally south-westerly northward of the island and north-westerly to southward. The sea is usually smoother southward of the island than to northward.

The westerly and north-westerly winds reach Beaufort force 7 or more (over 28 knots) about five or six times on an average in winter. Easterly winds tend to give local squalls off the mouths of valleys opening on to the coast.

In the summer westerly winds predominate on the whole, but southerly and south-westerly winds at Ajaccio. The light land breeze from an easterly direction is often felt at night and in the early morning.

Golfo di Genova.—Along the coast from Nice to Genova gales are not common, even in winter, but from Genova to La Spezia the coast becomes progressively less sheltered.

There is a very decided difference between the prevailing winds on the western side (Cap Ferrat and Nice) and the eastern side (San Remo) of the mountain barrier between the French and Italian Rivièras, the predominating easterly and westerly winds of the French Riviera being replaced in this short distance by prevailing northerly winds in winter and southerly winds in summer.

The northerly winds that prevail in winter along the coast of the Gulf have local deviations according to the topography of the different regions; the most frequent winds are from between north-west and north-east at San Remo and Genova, north-westerly at La Spezia and north-easterly at Livorno. At Rapallo strong north-north-west winds known locally as "Provenza" occur. At Portoferraio northerly winds are sometimes fresh, especially in February and March, and cause much sea in the outer anchorage.

Although the Mistral is not commonly known by this name eastward of the French Riviera, winds of similar type are found in and around Golfo di Genova. At such times, winds are northerly at Genova, north-westerly on the western shore of the gulf, and at Livorno and Isola d'Elba, while at Capo delle Mele and Cap Ferrat, and in mid-gulf, they are from between north and east. They are occasionally violent, with heavy squalls from the ravines, especially during the day-time. Their speed generally falls off after sunset, especially near the French Riviera. In winter these winds may bring overcast sky with rain or snow, but in spring more often fine weather with exceptionally good visibility and little cloud; there are sometimes long spells of very dry and piercingly cold weather. Southward along the western coast of Italy these winds gradually decrease in frequency and intensity; although frequent and violent at Rapallo they are less frequent and seldom dangerous at Spezia, and further south are only occasionally strong enough to raise much sea.

Strong south-westerly winds ("Libeccio") occasionally blow in Golfo di Genova, but usually stop short of the head of the gulf, especially if there is snow on the mountains, and there is often a strong Libeccio at Capo delle Mele when the wind at Genova is calm or light northerly. This wind causes rough seas and overcast rainy weather in winter, and heavy squalls blow down the leeward valleys of such promontories as those that protect the harbours of Rapallo and La Spezia.

The south-easterly Scirocco (*see* page 32) also is prominent on this coast.

Between Cap Corse and Italy, on the shipping track from Genova passing Isola d'Elba, winds from the north-easterly and south-easterly quadrants are the most frequent in winter, but are less frequent and lighter in summer.

In the summer northerly winds decrease very much in frequency, and the prevailing winds are from between south-east and south-west in the northern part of the gulf and westerly on the coast of Tuscany, while in Isola d'Elba north-westerly and north-easterly winds prevail. At Portoferraio north-westerly winds are sometimes strong, but usually decline after sunset.

Western coast of Italy.—In winter, along the coast, the most frequent winds are northerly and north-easterly in most regions, except to southward of Napoli. Southward of Napoli the northerly winds

decrease in frequency and southerly winds become for the most part the more frequent, although there are marked local variations due to topography, and over considerable regions there is no predominating direction.

- 5 In the Tyrrhenian sea in winter there is no predominating direction of wind. In Stretto di Messina the predominant winds in winter are north-westerly, but southerly, and, in a lesser degree, south-westerly and westerly winds are also frequent. North-easterly winds, descending from the mountains of Calabria, are also notable locally on the
10 eastern side of the strait. There are often opposing winds. When there is a fresh north-westerly wind in the Tyrrhenian sea, and a south-easterly wind to the southward, there is a heavy sea in the strait.

- Along the coast northward of Napoli gales are chiefly southerly. They are most frequent between Isola d'Elba and Civitavecchia,
15 decreasing in frequency southward of that region. Such gales are associated with depressions moving eastwards across the north-western Mediterranean, and they may last for two or three days. With the passage of the depression the wind veers to west or north-west, often suddenly, with a cold-front squall which may be violent ; as a rule it
20 begins to moderate before long, but should it subsequently back to southward of west, another south-easterly gale is probable.

These gales seldom occur at Napoli, and, when they do, bad weather does not usually last for more than 24 hours.

- These southerly and south-westerly gales bring overcast skies and
25 low cloud, with rain or drizzle and sometimes snow, the thick weather continuing until the wind veers to westward ; they raise a heavy sea, and at Porto-canale di Fiumicino, near Rome, it is sometimes impossible to enter the harbour.

- When a depression, instead of moving eastward across the head of
30 the Adriatic into the Balkans, travels south-eastward along the Adriatic, gales and strong winds from between north-west and north-east may last for three, and sometimes even six, days along the coast northward of Naples. At Porto Santo Stefano these north-easterly gales cause an unpleasant sea which is dangerous to small vessels. In
35 Golfo di Gaeta these winds are most often eastward of north, but when northerly are said to be violent and dangerous.

- Southward of Napoli, as far as Calabria, the coast is rather further removed from the tracks of the deepest depressions, and gales from all directions are decidedly less common than they are in the north.
40 Along the coast of Calabria there are occasional gales and strong winds from south-westward and, less frequently, south-eastward. Such winds may persist, with brief intervals, for two weeks at a time, bringing showers of rain or sleet, with rough seas ; they tend to veer through west to north-north-west without much decrease in strength. The
45 south-easterly winds, even when strong, do not raise much sea in Golfo di Gioia. Gales from north-westward and northward are produced from time to time by depressions moving down the Adriatic towards the Ionian sea, and gales from north-eastward occur occasionally with low pressure in the vicinity of the Ionian sea and high pressure over
50 the Alps. These gales are said to be particularly violent at Paola, where, owing to the conformation of the mountains, they blow from east-north-eastward.

- In parts of the region where the coast is precipitous local squalls known as " Raggiature " (land squalls) are encountered off the mouths
55 of coastal valleys during disturbed weather. Such squalls occur with north-westerly winds on the eastern coast of Isola di Ponza ; they

are frequent southward of Napoli, in Golfo di Salerno, along the coasts of Calabria and in Stretto di Messina. They may be very violent close inshore, but do not extend far seawards. Their direction may differ considerably from that of the wind prevailing at sea; for example, squalls from south-eastward may occur in the Golfo di Gioia 5 when the wind at sea is south-westerly.

In the Tyrrhenian sea as a whole gales are not frequent; they occur on three or four days per month in winter, and less often in spring and autumn, and are most often from south-eastward and north-westward. 10

In Stretto di Messina strong winds are associated with the passage of depressions in the vicinity. The chief strong winds in the northern part during the late winter and early spring are from between west and west-south-west, while in the middle of the strait when there is snow on the Calabrian mountains north-easterly winds are apt to be very 15 violent off parts of the eastern shore.

In the summer the winds along the western coast of Italy are mainly onshore, south-westerly or westerly in the northern part and north-westerly on the coast of Calabria. Wind speed decreases, and the number of calms increases except in the straits. Strong winds are 20 few and gales rare. The sea breeze is sometimes moderate and may raise sufficient sea to prevent communication with the shore in the day time (*see* under "Land and sea breezes," page 33).

In the Tyrrhenian sea in summer there is a considerable increase in the frequency of north-westerly winds and a decrease in easterly winds. 25 North-westerly is the most frequent wind direction but in general winds are light and variable. The north-westerly wind at times freshens and raises a sea which may last some days.

In Stretto di Messina winds from between north-west and north-east prevail in summer, the north-westerly winds of winter veer to north-ward, while the number of southerly and westerly winds decreases 30 greatly. During the daytime it often happens that the wind is north-easterly at places on the eastern side of the strait, and north-westerly or northerly elsewhere; it is light in the middle of the strait, while on the coast, where it sets in about sunrise, it blows fresh in the after- 35 noon, and often subsides to dead calm after sunset. Westerly winds, although of short duration, are sometimes strong. South-easterly winds may last for as long as two weeks before veering through west to north-west, but in this season they are very infrequent. Violent squalls are apt to descend the valleys opening on to the coast. Opposing 40 winds are frequent, for example southerly winds from the Malta channel may meet fresh north-westerly winds from the Tyrrhenian sea, and this gives choppy conditions in the strait. Similarly, south-westerly winds may meet easterly winds, and much cloud then collects over the meeting place in the southern part of the strait. 45

Southern coast of Italy.—In winter, winds are mainly from between north-west and north-east, and from between south-east and south-west. The principle change from winter to summer is that the sea-breeze becomes fairly regular, and is generally the prevailing wind during the daytime, while there is a general decrease of wind speed. 50

The northerly and north-easterly winds of winter are known as "Bora." They are strong in the afternoon, and may reach gale force, but decrease greatly in strength at night. At Gioiosa these north-easterly winds do not usually raise much sea, but when strong they cause heavy seas in Golfo di Taranto, which greatly inconvenience 55 vessels in Porto Nuovo (Crotone) while rendering communication with

the shore difficult at Taranto, even in Mar Piccolo. The similar but less strong winds of summer are known as "Borino."

The south-easterly Scirocco (*see* below) brings thick weather and rain, and often heavy seas in winter, to this coast, although at Taranto it does not raise much sea in Mar Grande. The south-easterly wind is often preceded on this coast, as elsewhere, by a rise in the water level.

Local squally winds occur on this coast, such as the occasional heavy offshore squalls, lasting for a few hours at a time, which occur near Gioiosa, and the strong westerly "Cosidetti" in Golfo di Taranto, both of which are most frequent in spring, while in summer there are brief spells of strong winds from between north-east and north-west known as "Tormenta," which last are associated with thunderstorms.

Over the sea near the entrance to Golfo di Taranto the winds are variable in winter, but on the whole the most frequent directions are from between south and west, and from north-east. In summer the prevailing winds are north-westerly and northerly.

Scirocco.—The Scirocco is a warm southerly wind experienced in all parts of the Mediterranean, though its character is somewhat different in different parts. The true Scirocco is of desert origin. It is usually a south-easterly wind, but in Italy and Sicily may blow from any direction between south-east and south-west.

Scirocco winds blow on the eastern sides of depressions crossing the Mediterranean, but not every depression causes a Scirocco.

The accompanying weather when the track of the depression lies at a considerable distance is very different from the weather experienced when the centre of the depression passes within about one or two hundred miles.

In the first alternative the sky is generally cloudless during the daytime, but the weather is hazy and close; at night the sky will often become covered with low stratus cloud, and very heavy dew may be deposited. This is the usual type of Scirocco in the Riviera.

In the second alternative, the weather will often become thick and gloomy, with rain or drizzle. This is the commonest type on the western coast of Italy, and usually persists for a day or two, or even longer. The wind sometimes reaches gale force in winter; at Livorno it can be very disagreeable, sending a heavy sea into the harbour; but in the northern part of Golfo di Genova, especially when there is snow on the coastal mountains, its speed falls off rapidly towards the coast, and, like south-easterly gales in the Gulf of Lions, it often does not reach the coast. Frequently there may be strong Scirocco at Portofino, when at Genova there is a light northerly wind or a calm. Occasionally, however, in winter, these southerly gales do extend to Genova and cause great damage in the port.

At these times of strong Scirocco a heavy swell is experienced in, and along the shores of, the gulf, and the water level rises decidedly in some places, at times by as much as 12 feet (3^m7). The rise may precede the setting in of the wind by 24 hours.

On the western coast of Italy northward of about Napoli the sudden change from these moist warm southerly winds, to the dry, biting cold northerly winds which commonly succeed them, makes the winter climate very trying in unsheltered places; a rise of water level on this coast often precedes the setting in of the Scirocco by some hours, just as happens in Golfo di Genova.

In southern Italy a hot, dry Scirocco also occurs, when there is a depression north-westward or northward of the Tyrrhenian sea, and pressure is high over the eastern Mediterranean. It is most frequent

in spring and autumn, and is normally of shorter duration than the moist Scirocco, because these depressions often move rapidly eastwards across the Balkans. It may carry large quantities of sand or dust from the African desert, which gives rise to haze, and to dark skies on account of the dust suspended at high altitudes. It is felt as far 5 north as Rome, and on the eastern coast of Corsica.

Land and sea breezes.—(See standard article on "Local modification of the weather near the coast," page xlix). These are well developed along the coasts in the warm season; in many parts, notably along the western coast of Italy, they are the prevailing winds in summer. 10 In the Gulf of Lions, on Mistral days in summer, the wind along the coast frequently changes to southerly by day and only returns to north-westerly at night.

Cloud.—There is in all seasons less cloud both at sea and on the coast in this region than around the British Isles. 15

At sea the cloudiest season is from November to February, when on an average the sky is from 5- to 6-tenths clouded except in the Gulf of Lions and Golfo di Genova, in December and January, where in these two months it is barely 5-tenths clouded. The least cloudy months 20 are June to September, the average in July and August being less than 2-tenths in the south and about 3-tenths in the north.

On the coast, in summer, the average amount of cloud is about the same as at sea, but in other seasons it is for the most part slightly greater, particularly on the western coast of Corsica and on the eastern shore of the Gulf of Genova, from November to March, where in those 25 months it averages fully 6-tenths.

The number of mainly overcast days per month in summer averages in most places about 3 to 6, and even less locally in the south; in winter it is about 6 to 10. The number of days per month with little or no cloud in July and August averages about 15 to 20, and is as large 30 as 25 locally in the south; in winter it is about 5 to 10.

Rain.—The rainfall of these coasts is much affected by local topography, and therefore varies considerably from place to place.

The annual fall over most of the region averages between 20 and 40 inches, and is therefore slightly greater than that of south-east 35 England, but at Genova, owing chiefly to the large falls usual in October and November, it is over 50 inches (rather more than twice that of south-east England). At most places the wettest months are October to December, and the driest July. In the latter month the average fall is less than a quarter of an inch at Ajaccio and 40 Gallipoli.

The number of days per month with appreciable rain (0.04 inches or more) is about 8 to 10 in the wettest months at Napoli and farther north, but only 5 to 6 farther south; the number with considerable rain (0.40 inches or more) is about 4 to 6 in the north and 2 to 3 in the 45 south.

In the French Riviera, and along the shore of the Gulf of Lions, the months of June to August are sometimes practically rainless, but the autumn rains rarely fail; the amount of rain that falls in the more prolonged downpours of this season, which occur mostly with south- 50 easterly to easterly winds, or with thunderstorms, may be very considerable. Between 8 and 9 inches has been recorded in a single day at Marseille, both in September and October. Such falls are, however, very rare.

The rainfall of the shores of Golfo di Genova and Corsica is rather 55 similar to that of the region just described, but a larger proportion of

the rain falls with south-westerly and westerly winds. At Ajaccio as much as 3 inches has been known to fall in one day in November.

On the western coast of Italy, also, much rain may fall with south-westerly and westerly winds; at Napoli rain has occasionally fallen on 5 15 consecutive days in winter. The summer months are, however, occasionally practically rainless, and this may happen also on the southern coast of Italy, where there is less rain than in the north.

Thunderstorms, which are most likely to develop in summer and autumn, occur on 15 to 20 days in the year over most of the region, 10 and at some places on about 25 days. Many of the autumn storms are associated with cold fronts, especially at the onset of the Mistral in the Gulf of Lions and in the French Riviera. Those which develop locally in a prolonged spell of hot weather in summer and early autumn are seldom encountered more than fifty miles from the coast. Thunder- 15 storms are the cause of much of the summer rainfall on the coast.

Hail is more common in winter and spring than at other seasons, but is infrequent. When it occurs it is usually associated with thunderstorms of the cold-front type, but may occur with violent heat thunderstorms, occasionally even in July and August.

20 Snow does not occur at sea level on an average on more than two or three days in the year in the north, and is even less common in the south.

Fog and visibility.—At sea, over the Gulf of Lions, Golfo di Genova, and the Ligurian sea, during most of the year fog occurs only 25 on about one day in three months, but in May it is more frequent, and may be expected on an average on one day in that month. Farther south it hardly ever occurs during the late autumn and winter, and only about once in four months in other seasons.

Visibility of less than 5 miles at sea is more common in the north 30 than in the south, and more common from April to August than in other months. In June, July and August it may be expected in the Gulf of Lions and Golfo di Genova on 6 to 10 days per month, but only on 4 to 6 days farther south.

On the coast, fog is more frequent in winter than in summer, especially 35 near large towns where there is a good deal of smoke, and in such circumstances fog may occur on 2 to 3 days per month in winter, being most common around sunrise or soon after. In such areas, particularly in the north of the region in winter, visibility is less than 5 miles on 5 to 10 days per month, but in regions little subject to industrial 40 smoke on only about 1 to 3 days per month, decreasing to less than 1 day per month from July to September.

Visibility is often poor when strong Marin, Scirocco and Libeccio winds are blowing, but with northerly winds of the Mistral and Bora type it is usually good, and often very good, except during frontal 45 showers.

Fog and haze sometimes hinder navigation in Golfe de Marseille. In summer the haze is mostly due to smoke from the town and factories of Marseille, and often occurs with light easterly breezes; it is usually dispersed during the forenoon by the sea breeze.

50 In Bonifacio strait fog is fairly frequent in the early morning in late spring.

Temperature and humidity.—Mean temperature for the year is about 57° F. at Marseille, but over most of the region is between 60° and 63°. The summers are hot and the winters for the most part mild.

55 July and August are the hottest months, with mean temperature about 75° except southward of Napoli, where it is between 75° and 80°.

In these months on an average temperature throughout the whole region rises by day to between 80° and 85° , and in exceptionally hot weather has been known to reach, or slightly exceed, 100° locally. There is a difference between the north and the south as regards the temperature at night, the nights being considerably the warmer in the south; at Marseille on an average temperature falls nearly to 60° in July and August, but at Taranto and Gallipoli only to about 70° , and at Messina to 76° .

In January, which is the coldest month, the mean temperature ranges from around 45° in the north to nearly 50° in the south, and, on an average, temperature rises to between 50° and 56° during the day. At Marseille, in that month, the lowest temperature reached during the night is generally between 35° and 40° , and occasionally there is hard frost there; a minimum of 9° has been recorded in February and one of 11° in December. On the southern coast of Italy, on the other hand, even slight frost is exceedingly rare.

Relative humidity is moderate, and the seasonal variation is not large. In winter average humidity is around 70 per cent., and in summer around 60 per cent. in the north, but lower in the south. December is in most places the dampest month and July the driest. Day to day variations, however, can be large. These are usually connected with changes of wind, e.g., the setting in of a dry Mistral on the shore of the Gulf of Lions may take the humidity below 20 per cent., even though temperature may be low. At Genova the humidity has been known to fall to 15 per cent. with a temperature of 46° , as a result of northerly winds. On the other hand the south-easterly Marin, and the Scirocco, usually bring nearly saturated air, and frequently drizzle to Golfo di Genova, the Scirocco in summer being often so moist and warm that dew is deposited in the daytime.

On the coasts of Corsica extreme dryness and heat may accompany squalls which blow down from the mountains.

On the western coast of Italy, northerly winds, although not generally so dry as those off the coast of Golfo di Genova, may take humidity down to between 20 and 30 per cent. in any month of the year; the Scirocco, on the other hand, is very damp.

The mean temperature of the sea surface is lowest in February. The general distribution at sea is shown in Fig. 3, from which it can

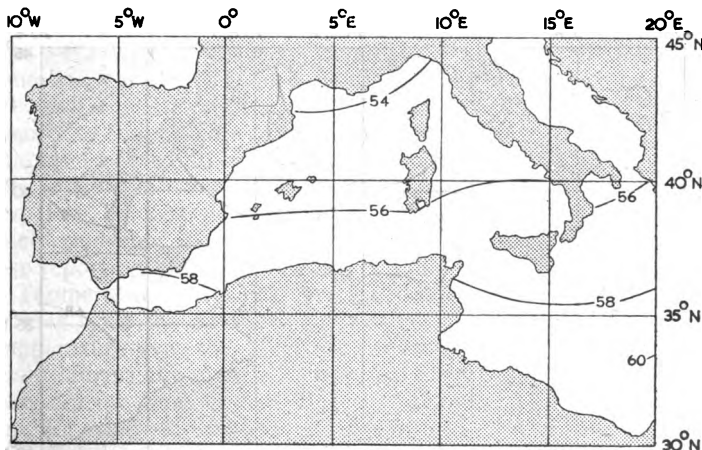


Fig. 3.

MEAN SEA SURFACE TEMPERATURE—FEBRUARY

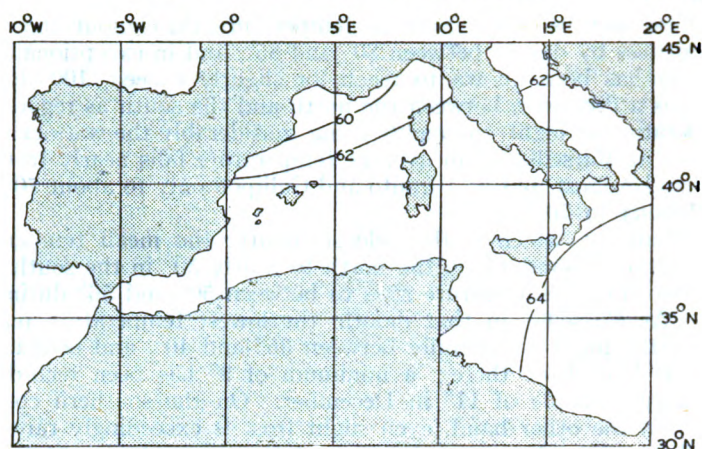


Fig. 4.

MEAN SEA SURFACE TEMPERATURE—MAY

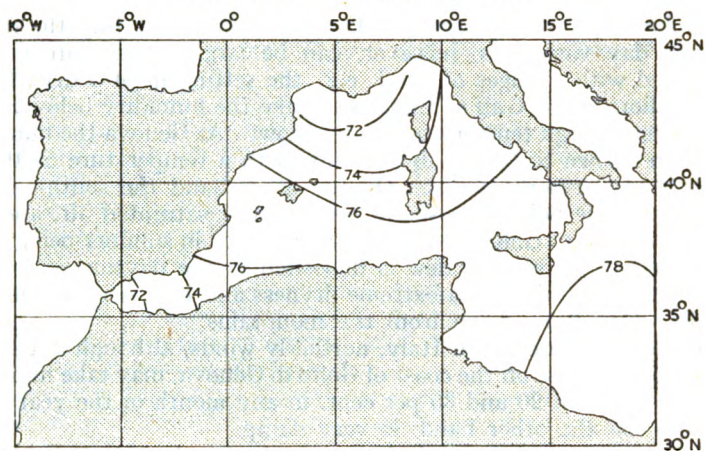


Fig. 5.

MEAN SEA SURFACE TEMPERATURE—AUGUST

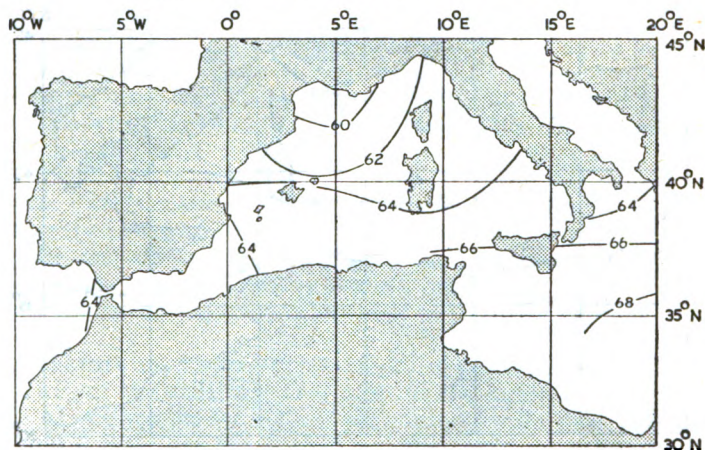


Fig. 6.

MEAN SEA SURFACE TEMPERATURE—NOVEMBER

be seen that the mean ranges from under 54° in the extreme north to about 57° around Stretto di Messina. Near the coast, however, the mean is as low as 48° in the extreme west of the Gulf of Lions, and as high as 57° in a tongue of warm water extending from the Calabrian coast as far north as Napoli.

The mean temperature of the sea surface is highest in August. The general distribution at sea is indicated in Fig. 5. It ranges from about 70° in the extreme north to about 77° in the south. Near the coast, however, the mean is only about 68° on the eastern side of the Gulf of Lions between Marseille and Cap Sicié, and about 73° off the eastern coast of Corsica and in Golfo di Taranto. The general distribution at sea in May and November is shown in Figs. 4 and 6.

From October to March, the mean temperature of the sea surface is from 1° to 3° warmer than the mean temperature of the overlying air ; in other months it is about one degree colder.

From December to April, the temperature of the sea surface on a particular day is very seldom more than 3° above or below the monthly mean for the place of observation, but from May to November, the difference may be 5° , and in September and October, may be 7° or 8° in the Gulf of Lions.

Mirage.—Mirage (*see* standard article, page xxxiii) is frequent in the Gulf of Lions, this being a region where large differences between the temperatures of the sea surface and of the overlying air, are common.

The mirage of Stretto di Messina known as "Fata Morgana," in which multiple images are formed, is one of the most striking examples of the phenomenon to be seen in any part of the world. Over the rest of the region mirage may be expected occasionally, especially close inshore in the morning when temperature is rising rapidly, or when the surface layers of hot winds from the land are being cooled by the sea.

Waterspouts.—Waterspouts occur from time to time, particularly off the French and Italian Riviera. During the autumn, at the onset of the south-westerly winds known on the coasts of Spain as "Vendavales," they are fairly common in the Gulf of Lions. They may be associated with cold-front thunderstorms, and appear to favour the neighbourhood of projecting headlands such as Cap Creux.

CLIMATIC TABLES.—The tables that follow give statistics for several land stations at which there is a regularly reporting weather station. The figures given are averages, percentage frequencies, or extremes, as stated ; it must be realised that these values refer to the actual positions in which the weather has been observed and *not* necessarily to the open sea or to the approaches to ports in the vicinity. The tables for land stations should therefore be consulted with discretion, since most meteorological elements are affected, sometimes a great deal, by local conditions. The following notes indicate ways in which conditions in the open sea may be different from those at the nearest reporting station for which a table is published.

(1) Temperatures over the sea are less extreme, or show smaller departures from the mean, than those over the land. In winter the air temperature over the sea is usually higher than at a land station, especially during the night and early part of the day. In summer the air temperature over the sea is usually lower than that at a land station, especially during the afternoon.

(2) Rainfall in this region is largely dependent on the contours of the adjacent land, and in general is likely to be smaller at sea than on

the coast, except in the north of the area, with northerly winds, when it is likely to be somewhat greater at sea.

(3) Cloud amount, which in this region is very variable, is only broadly representative of the state of the sky at sea. There is a
5 tendency for the amount to be less at sea than on the coast during the day, but to be slightly greater at night.

(4) Wind speed is nearly always greater over the sea than over the land, and there may be twice the number of gales at sea than are
10 experienced at a shore station unless it is exceptionally well exposed on, for example, a headland or small low-lying island. Wind direction is affected as explained under "Local modification of the weather near the coast" (page xlix).

(5) The figures for fog or poor visibility at inland stations or sheltered harbours are no guide to conditions at sea and in the approaches
15 to ports (*see* under "Fog," page 34). On the rather rare occasions when there is fog on the coast, better visibility will nearly always be found at sea.

PLACE.—MARSEILLE. LAT. 43° 18' N., LONG. 5° 23' E. Height above Mean Sea Level, 246 feet.
Climatic Table compiled from 10 to 113 Years' Observations, 1823 to 1944.

| MONTH | PRES- SURE at M.S.L. Mean of 24 hrs. | AIR TEMPERATURE Mean of | | Relative humidity | SKY No. of days | RAIN No. of days with 0.04 in. or more | WIND DIRECTION | | | | | | | | | | | | Mean wind speed | No. of days with wind of force 8 or more | No. of days with visibility less than ½ nautical mile | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | Daily Max. | Daily min. | | | | Percentage of observations from | | | | | | Percentage of observations from | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 0700 1300 | | | | | | 0700 1300 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | N. | NE. | E. | SE. | S. | SW. | W. | NW. | Calm | N. | NE. | E. | | | | SE. | S. | SW. | W. | NW. | Calm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| January | mb. 1017 | 52 | 37 | 61 | 27 | 25 | % 55 55 55 55 55 55 | ° F. 52 37 61 27 25 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 | ° F. 55 38 64 32 30 |

Standard of time—G.M.T.

* Mean of highest each year.

** Mean of lowest each year.

† Highest recorded temperature } in 113 years.
‡ Lowest recorded temperature }

Authorities :—MS. data supplied by l'Office National Météorologique, Paris.
Paris, Bureau Central Météorologique, Annales.

METEOROLOGICAL OFFICE,
AIR MINISTRY.

PLACE—AJACCIO. LAT. 41° 56' N., LONG. 8° 45' E. Height above Mean Sea Level, 7 feet.
Climatic Table compiled from 5 to 50 Years' Observations, 1851 to 1936.

| MONTH | PRES- SURE at M.S.L. | AIR TEMPERATURE | | Relative humidity | SKY No. of days (estimated) | RAIN | WIND DIRECTION § | | | | | | | | | | Mean wind speed | | No. of days with wind of force 8 or more | No. of days with visibility less than ½ nautical mile |
|---------------------------------|-------------------------------|-----------------|---------------|----------------------|--------------------------------------|------|---------------------------------|-----|----|-----|----|-----|----|-----|------|---|--------------------|------|---|--|
| | | Daily max. | Daily min. | | | | Mean of day | | | | | | | | | | 0800 | 1400 | | |
| | | | | | | | Percentage of observations from | | | | | | | | | | | | | |
| | | | | | | | N. | NE. | E. | SE. | S. | SW. | W. | NW. | Calm | | | | | |
| January | mb. | ° F. | ° F. | % | % | in. | 9 | 18 | 2 | 41 | 1 | 6 | 5 | 19 | 5 | 3 | 3 | 6 | 0.6 | 0 |
| February | 1017 | 56 | 40 | 63 | 83 | 33 | 3.0 | 13 | 3 | 34 | 2 | 8 | 8 | 23 | 8 | 1 | 3 | 7 | 0 | 0.1 |
| March | 1016 | 58 | 41 | 64 | 82 | 61 | 2.5 | 11 | 1 | 30 | 3 | 11 | 6 | 27 | 5 | 2 | 3 | 7 | 0.3 | 0.2 |
| April | 1013 | 62 | 44 | 71 | 79 | 61 | 2.9 | 13 | 1 | 34 | 3 | 13 | 7 | 26 | 6 | 2 | 3 | 7 | 0 | 0.4 |
| May | 1013 | 66 | 48 | 76 | 76 | 59 | 2.3 | 16 | 0 | 30 | 2 | 12 | 5 | 29 | 2 | 7 | 2 | 7 | 0 | 0.1 |
| June | 1014 | 73 | 53 | 84 | 66 | 59 | 1.5 | 16 | 0 | 28 | 1 | 16 | 8 | 30 | 2 | 6 | 3 | 7 | 0 | 0.1 |
| July | 1015 | 80 | 59 | 89 | 54 | 64 | 1.0 | 13 | 0 | 24 | 1 | 11 | 5 | 29 | 3 | 5 | 1 | 6 | 0 | 0 |
| August | 1015 | 85 | 64 | 94 | 57 | 67 | 0.4 | 13 | 0 | 26 | 2 | 7 | 5 | 33 | 5 | 5 | 1 | 6 | 0 | 0 |
| September | 1015 | 86 | 64 | 93 | 58 | 68 | 0.5 | 15 | 0 | 28 | 2 | 6 | 6 | 27 | 5 | 4 | 2 | 6 | 0.3 | 0.1 |
| October | 1016 | 81 | 61 | 89 | 52 | 73 | 1.6 | 15 | 1 | 33 | 2 | 7 | 7 | 26 | 4 | 4 | 3 | 5 | 0 | 0 |
| November | 1015 | 73 | 54 | 82 | 46 | 78 | 3.9 | 13 | 1 | 36 | 2 | 8 | 10 | 21 | 6 | 4 | 3 | 5 | 0 | 0 |
| December | 1015 | 64 | 48 | 73 | 40 | 84 | 4.3 | 8 | 3 | 37 | 3 | 7 | 9 | 22 | 7 | 3 | 3 | 4 | 0.6 | 0.1 |
| | 1016 | 59 | 44 | 66 | 3 | 3.5 | 11 | 10 | 3 | 36 | 3 | 7 | 9 | 22 | 7 | 3 | 3 | 4 | 0.6 | 0.1 |
| Means | 1015 | 70 | 52 | 96* | — | 31** | — | 13 | 1 | 33 | 2 | 9 | 7 | 26 | 5 | 4 | 2 | 6 | — | 1 |
| Totals | — | — | — | — | 93 | 27.4 | 84 | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Extreme values | — | — | — | — | 94 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| No. of years' obser- vations | 50 | 40 | 40 | 40 | 15 | 40 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 5 | 5 | 5 | 5 | 5 | 10 |

§ Observations at Îles Sanguinaires, 41° 53' N., 8° 36' E., 272 feet.

* Mean of highest each year.

** Mean of lowest each year.

Standard of time—15° East Meridian.
† Highest recorded temperature } in 45 years.
‡ Lowest recorded temperature }

Authorities :—MS. data supplied by l'Office Nationale Météorologique, Paris.
Paris, Bull. mens. de l'O. N.M.

METEOROLOGICAL OFFICE,
AIR MINISTRY.

PLACE—GENOVA. LAT. 44° 24' N., LONG. 8° 55' E. Height above Mean Sea Level, 177 feet.
Climatic Table compiled from 4 to 50 Years' Observations, 1871 to 1925.

| MONTH | PRES- SURE at M.S.L. | AIR TEMPERATURE | | | Relative humidity | SKY No. of days | RAIN | WIND DIRECTION | | | | | | | | | | | | Mean wind speed | No. of days with wind of force 8 or more | No. of days with visibility less than ½ nautical mile | | | | | | | | |
|----------------------------|-------------------------------|--------------------|---------------|--------------------------|----------------------|-----------------------|------|-------------------------|---------------------------------|-----|----|-----|----|-----|---------------------------------|-----|------|----|-----|-----------------------|---|--|----|-----|----|-----|----|-----|------|---|
| | | Daily max. | Daily min. | Highest in each month | | | | Lowest in each month | 0900 | | | | | | 1500 | | | | | | | | | | | | | | | |
| | | | | | | | | | Percentage of observations from | | | | | | Percentage of observations from | | | | | | | | | | | | | | | |
| | | | | | | | | | N. | NE. | E. | SE. | S. | SW. | W. | NW. | Calm | N. | NE. | | | | E. | SE. | S. | SW. | W. | NW. | Calm | |
| January | mb. | 50 | 42 | 58 | 30 | 52 | in. | 37 | 21 | 12 | 7 | 6 | 5 | 2 | 0 | 4 | 18 | 33 | 11 | 6 | 13 | 9 | 3 | 2 | 6 | 17 | 8 | 3 | 5 | |
| February | 1018 | 59 | 43 | 61 | 34 | 58 | 4.3 | 27 | 23 | 12 | 7 | 7 | 6 | 1 | 0 | 0 | 17 | 30 | 14 | 6 | 18 | 13 | 5 | 1 | 2 | 9 | 9 | 8 | 4 | 0 |
| March | 1015 | 57 | 47 | 65 | 37 | 59 | 4.2 | 7 | 23 | 12 | 15 | 11 | 3 | 2 | 1 | 0 | 15 | 21 | 15 | 18 | 13 | 7 | 6 | 3 | 6 | 8 | 9 | 10 | 0 | |
| April | 1012 | 62 | 53 | 71 | 44 | 63 | 3.4 | 11 | 13 | 12 | 15 | 21 | 7 | 2 | 2 | 2 | 18 | 13 | 7 | 23 | 24 | 21 | 6 | 1 | 6 | 7 | 8 | 7 | 0 | |
| May | 1014 | 67 | 58 | 79 | 50 | 63 | 2.8 | 5 | 14 | 8 | 31 | 19 | 7 | 2 | 2 | 2 | 19 | 9 | 5 | 5 | 20 | 27 | 19 | 4 | 4 | 7 | 6 | 7 | 0 | |
| June | 1015 | 76 | 65 | 84 | 58 | 61 | 2.5 | 5 | 14 | 8 | 31 | 19 | 7 | 2 | 2 | 2 | 19 | 9 | 5 | 5 | 20 | 27 | 19 | 4 | 4 | 7 | 6 | 7 | 0 | |
| July | 1015 | 81 | 70 | 88 | 62 | 62 | 1.7 | 3 | 12 | 8 | 11 | 35 | 21 | 4 | 2 | 2 | 10 | 3 | 5 | 3 | 4 | 28 | 34 | 10 | 3 | 1 | 2 | 7 | 7 | 0 |
| August | 1015 | 81 | 70 | 88 | 62 | 62 | 1.7 | 3 | 12 | 8 | 11 | 35 | 21 | 4 | 2 | 2 | 10 | 3 | 5 | 3 | 4 | 28 | 34 | 10 | 3 | 1 | 2 | 7 | 7 | 0 |
| September | 1015 | 81 | 70 | 88 | 62 | 62 | 1.7 | 3 | 12 | 8 | 11 | 35 | 21 | 4 | 2 | 2 | 10 | 3 | 5 | 3 | 4 | 28 | 34 | 10 | 3 | 1 | 2 | 7 | 7 | 0 |
| October | 1016 | 75 | 66 | 83 | 57 | 61 | 2.9 | 21 | 13 | 13 | 20 | 11 | 9 | 2 | 1 | 6 | 12 | 12 | 5 | 9 | 29 | 30 | 8 | 3 | 2 | 5 | 6 | 9 | 8 | 0 |
| November | 1015 | 68 | 58 | 74 | 47 | 65 | 4.9 | 6 | 23 | 11 | 9 | 2 | 1 | 0 | 3 | 10 | 29 | 11 | 8 | 22 | 14 | 3 | 2 | 1 | 5 | 6 | 9 | 8 | 0 | |
| December | 1016 | 58 | 50 | 66 | 39 | 59 | 7.1 | 48 | 27 | 3 | 4 | 4 | 1 | 0 | 3 | 10 | 40 | 17 | 6 | 13 | 7 | 3 | 2 | 1 | 6 | 9 | 11 | 11 | 1 | 0 |
| | | 52 | 44 | 61 | 34 | 59 | 5.0 | 35 | 20 | 3 | 9 | 6 | 3 | 0 | 5 | 14 | 34 | 15 | 4 | 13 | 13 | 5 | 1 | 1 | 6 | 9 | 10 | 10 | 2 | 0 |
| Means | 1015 | 65 | 55 | 90* | 23** | 61 | — | 26 | 17 | 9 | 17 | 10 | 3 | 1 | 3 | 14 | 20 | 9 | 7 | 22 | 21 | 9 | 3 | 3 | 3 | 6 | 8 | 8 | — | 1 |
| Totals | — | — | — | — | — | — | 51.7 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Extreme values | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| No. of years' observations | 50 | 50 | 50 | 20 | 20 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 5 | 4 |

§ At 0900 only.

* Mean of highest each year.

** Mean of lowest each year.

Standard of time—15° East Meridian.

† Highest recorded temperature } in 50 years.
‡ Lowest recorded temperature }

Authorities:—Rome, R. Ufficio Centrale meteor. geodin., Annali.

MS. data supplied by R. Ufficio Centrale di Meteorologia e Geofisica, Rome.

METEOROLOGICAL OFFICE,
AIR MINISTRY.

PLACE—LIVORNO. LAT. 43° 33' N., LONG. 10° 18' E. Height above Mean Sea Level {79 feet until 1931.
10 feet from 1932.
Climatic Table compiled from 4 to 50 Years' Observations, 1871 to 1939.

| MONTH | PRES- SURE at M.S.L. | AIR TEMPERATURE | | Relative humidity | SKY No. of days | RAIN | WIND DIRECTION | | | | | | | | | | | | Mean wind speed | No. of days with wind of force 8 or more | No. of days with visibility less than ½ nautical mile | | | | | | |
|----------------------------|-------------------------------|--------------------|---------------|----------------------|-----------------------|------|---------------------------------|-----|----|-----|----|-----|---------------------------------|-----|------|----|-----|----|-----------------------|---|--|-----|----|-----|-----|-----|------|
| | | Daily Max. | Daily min. | | | | 0800 | | | | | | 1900 | | | | | | | | | | | | | | |
| | | | | | | | Percentage of observations from | | | | | | Percentage of observations from | | | | | | | | | | | | | | |
| | | | | | | | N. | NE. | E. | SE. | S. | SW. | W. | NW. | Calm | N. | NE. | E. | | | | SE. | S. | SW. | W. | NW. | Calm |
| January | mb. | ° F. | ° F. | % | 8* | in. | 10 | 8 | 6 | 4 | 6 | 6 | 1 | 13 | 3 | 24 | 27 | 5 | 5 | 8 | 7 | 4 | 17 | 9 | 1 | 0.9 | |
| February | 1017 | 51 | 40 | 59 | 74 | 69 | 2.7 | 2 | 26 | 29 | 4 | 5 | 5 | 0 | 25 | 3 | 13 | 20 | 2 | 7 | 10 | 6 | 27 | 9 | 2 | 0.5 | |
| March | 1015 | 54 | 41 | 60 | 75 | 69 | 2.4 | 1 | 24 | 27 | 5 | 5 | 6 | 2 | 23 | 6 | 12 | 14 | 6 | 9 | 11 | 12 | 11 | 8 | 2 | 0.1 | |
| April | 1013 | 57 | 44 | 68 | 71 | 67 | 3.0 | 2 | 21 | 24 | 6 | 6 | 7 | 2 | 26 | 4 | 7 | 3 | 13 | 12 | 16 | 18 | 20 | 8 | 1 | 0.1 | |
| May | 1012 | 64 | 49 | 72 | 67 | 6 | 2.4 | 9 | 18 | 21 | 7 | 7 | 7 | 10 | 4 | 28 | 4 | 17 | 5 | 15 | 11 | 21 | 18 | 7 | 0.6 | 0.2 | |
| June | 1012 | 69 | 55 | 77 | 45 | 69 | 67 | 3 | 16 | 17 | 7 | 10 | 9 | 7 | 3 | 29 | 3 | 4 | 3 | 15 | 11 | 21 | 18 | 6 | 7 | 0.8 | |
| July | 1014 | 78 | 62 | 86 | 54 | 62 | 11 | 0.7 | 15 | 14 | 5 | 3 | 9 | 4 | 33 | 5 | 4 | 1 | 5 | 9 | 16 | 22 | 21 | 8 | 7 | 0.4 | |
| August | 1015 | 83 | 68 | 91 | 59 | 63 | 16 | 0.8 | 13 | 15 | 3 | 9 | 11 | 6 | 29 | 8 | 2 | 2 | 1 | 8 | 15 | 23 | 26 | 18 | 6 | 0.5 | |
| September | 1016 | 83 | 67 | 89 | 57 | 60 | 1.8 | 2 | 18 | 19 | 3 | 11 | 6 | 4 | 27 | 5 | 4 | 2 | 1 | 8 | 14 | 25 | 27 | 15 | 7 | 0.4 | |
| October | 1015 | 78 | 63 | 84 | 52 | 69 | 3.3 | 6 | 22 | 26 | 4 | 7 | 9 | 2 | 25 | 6 | 4 | 5 | 4 | 10 | 14 | 14 | 29 | 9 | 9 | 0.9 | |
| November | 1016 | 69 | 55 | 76 | 43 | 73 | 4.7 | 12 | 20 | 26 | 4 | 7 | 11 | 9 | 2 | 14 | 1 | 18 | 6 | 9 | 17 | 14 | 5 | 29 | 7 | 0.5 | |
| December | 1015 | 59 | 48 | 67 | 37 | 73 | 3.9 | 10 | 29 | 32 | 5 | 4 | 6 | 6 | 2 | 17 | 2 | 25 | 4 | 6 | 9 | 7 | 2 | 35 | 1 | 0.5 | |
| | 1015 | 53 | 42 | 61 | 31 | 73 | 3 | 9 | 29 | 35 | 3 | 3 | 7 | 5 | 1 | 17 | 2 | 25 | 1 | 3 | 7 | 7 | 2 | 28 | 9 | 2 | 0.9 |
| Means | 1015 | 67 | 53 | 92* | 70 | 66 | 34.7 | 85 | 3 | 21 | 25 | 5 | 6 | 7 | 2 | 24 | 5 | 10 | 11 | 3 | 8 | 12 | 15 | 23 | 7 | 8 | — |
| Totals | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 13 | — |
| Extreme values | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| No. of years' observations | 50 | 50 | 20 | 4 | 9 | 50 | 50 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 |

§ At 0800 only.

* Mean of highest each year.

** Mean of lowest each year.

Standard of time—15° East Meridian.

† Highest recorded temperature

†† Lowest recorded temperature

Authorities:—Rome, R. Ufficio Centrale meteor. geodin., Annali.

MS. data supplied by R. Ufficio Centrale di Meteorologia e Geofisica, Rome.

METEOROLOGICAL OFFICE,
AIR MINISTRY.

PLACE—NAPOLI. LAT. 40° 52' N., LONG. 14° 15' E. Height above Mean Sea Level, 489 feet.
Climatic Table compiled from 5 to 60 Years' Observations, 1866 to 1939.

| MONTH | PRES- SURE at M.S.L. | AIR TEMPERATURE Mean of | | | Relative humidity | SKY No. of days | | RAIN No. of days with 0.04 in. or more | WIND DIRECTION \$ | | | | | | | | | | | | Mean wind \$ speed | No. of days with force 8 or more | No. of days with visibility less than 1/2 nautical mile | | | | | | |
|----------------------------|-------------------------------|-------------------------------|---------------|--------------------------|----------------------|-------------------------|------|--|-------------------|---------------------------------|-----|----|-----|----|-----|---------------------------------|-----|------|----|-----|--------------------------|-------------------------------------|---|-----|----|-----|------|---|---|
| | | Daily max. | Daily min. | Highest in each month | | Lowest in each month | 0900 | | 1500 | 0800 | | | | | | 1900 | | | | | | | | | | | | | |
| | | | | | | | | | | Percentage of observations from | | | | | | Percentage of observations from | | | | | | | | | | | | | |
| | | | | | | | | | | N. | NE. | E. | SE. | S. | SW. | W. | NW. | Calm | N. | NE. | E. | SE. | S. | SW. | W. | NW. | Calm | | |
| January | mb. | 52 | 43 | 50 | 34 | 0 | 12 | in | 10 | 13 | 7 | 3 | 10 | 8 | 10 | 3 | 16 | 10 | 18 | 4 | 3 | 13 | 12 | 8 | 11 | 21 | 6 | 5 | 1 |
| February | 1016 | 54 | 44 | 50 | 34 | 6 | 10 | 2.8 | 8 | 13 | 4 | 4 | 10 | 3 | 13 | 3 | 21 | 9 | 18 | 7 | 2 | 12 | 13 | 11 | 7 | 17 | 22 | 6 | 0 |
| March | 1014 | 57 | 47 | 53 | 63 | 6 | 9 | 2.9 | 9 | 10 | 10 | 4 | 10 | 4 | 10 | 4 | 21 | 4 | 16 | 4 | 2 | 11 | 18 | 14 | 9 | 22 | 7 | 0 | |
| April | 1012 | 63 | 51 | 73 | 68 | 5 | 8 | 2.9 | 9 | 10 | 11 | 4 | 9 | 4 | 9 | 3 | 30 | 4 | 16 | 4 | 2 | 18 | 23 | 14 | 11 | 16 | 24 | 7 | 0 |
| May | 1014 | 71 | 58 | 82 | 60 | 6 | 7 | 2.9 | 6 | 9 | 11 | 8 | 8 | 3 | 6 | 5 | 35 | 7 | 5 | 2 | 5 | 11 | 19 | 15 | 12 | 24 | 6 | 0 | |
| June | 1015 | 77 | 64 | 85 | 55 | 6 | 2 | 1.5 | 4 | 6 | 6 | 4 | 9 | 3 | 6 | 4 | 33 | 4 | 6 | 3 | 2 | 11 | 16 | 14 | 20 | 24 | 3 | 0 | |
| July | 1015 | 83 | 69 | 90 | 61 | 54 | 11 | 0.9 | 2 | 4 | 3 | 6 | 6 | 4 | 7 | 7 | 52 | 7 | 2 | 2 | 2 | 11 | 16 | 16 | 26 | 24 | 3 | 0 | |
| August | 1016 | 83 | 69 | 90 | 61 | 53 | 18 | 2 | 2 | 6 | 5 | 4 | 4 | 4 | 7 | 4 | 47 | 5 | 2 | 2 | 2 | 8 | 18 | 22 | 20 | 19 | 3 | 0 | |
| September | 1017 | 77 | 65 | 84 | 58 | 11 | 4 | 2.9 | 6 | 6 | 6 | 5 | 6 | 4 | 7 | 23 | 5 | 7 | 8 | 7 | 3 | 11 | 13 | 17 | 16 | 23 | 5 | 0 | |
| October | 1016 | 69 | 58 | 77 | 64 | 12 | 6 | 3 | 10 | 15 | 10 | 6 | 9 | 4 | 6 | 33 | 6 | 8 | 7 | 3 | 11 | 13 | 17 | 12 | 23 | 5 | 5 | 0 | |
| November | 1016 | 60 | 51 | 68 | 41 | 71 | 9 | 4.5 | 11 | 16 | 5 | 2 | 6 | 4 | 6 | 27 | 11 | 15 | 4 | 3 | 7 | 12 | 9 | 13 | 26 | 5 | 5 | 0 | |
| December | 1016 | 54 | 46 | 61 | 38 | 74 | 5 | 4.7 | 12 | 23 | 6 | 4 | 5 | 7 | 5 | 8 | 23 | 12 | 21 | 5 | 2 | 8 | 12 | 4 | 9 | 27 | 6 | 7 | 0 |
| Means | 1015 | 67 | 55 | 92* | 32** | — | 13 | — | — | 19 | 6 | 4 | 7 | 7 | 5 | 6 | 33 | 6 | 11 | 4 | 3 | 11 | 16 | 13 | 14 | 22 | 5 | 6 | — |
| Totals | — | — | — | — | 111 | 84 | — | 34.8 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Extreme values | — | — | — | — | 7-10 | 60 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| No. of years' observations | 50 | 60 | | 25 | 5 | | | | | | | | | | | | | | 5 | | | | | | | | | | |

§ Observations at Capodichino, 40° 53' N., 14° 17' E., 312 feet.
‡ At 0800 only.
* Mean of highest each year.
** Mean of lowest each year.
† Highest recorded temperature } in 60 years.
‡ Lowest recorded temperature }

Authorities:—Aurino. S. Sul clima di Napoli, Rome, 1935.
MS. data at M.O.

METEOROLOGICAL OFFICE,
AIR MINISTRY.

PLACE—TARANTO. LAT. 40° 20' N., LONG. 17° 17' E. Height above Mean Sea Level, 135 feet.
Climatic Table compiled from 4 to 26 Years' Observations, 1880 to 1939.

| MONTH | PRES- SURE at M.S.L. | AIR TEMPERATURE | | Relative humidity | SKY No. of days | RAIN | WIND DIRECTION | | | | | | | | | | | | Mean wind speed | No. of days with wind of force 8 or more | No. of days with visibility less than ½ nautical mile | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|-------------------------------|--------------------|---------------|----------------------|--------------------------|---------|-------------------------|------|---------------------------------|-----|----|-----|------|-----|---------------------------------|----|-----|----|-----------------------|---|--|-----|----|-----|----|-----|------|----|----|----|----|----|----|---|----|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----|
| | | Mean of | | | | | 0800 | | | | | | 1900 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Daily max. | Daily min. | | Highest in each month | | Lowest in each month | | Percentage of observations from | | | | | | Percentage of observations from | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| January | mb. | 54 | 43 | 61 | 83 | % 73 | % 66 | ° F. | ° F. | 6 | 10 | in. | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 13 | 11 | 18 | 5 | 14 | 10 | 11 | 13 | 11 | 10 | 8 | 10 | 16 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0</ |

§ Observations are at 40° 28' N., 17° 13' E., 164 feet at 0800 only.

* Mean of highest each year.

** Mean of lowest each year.

Standard of time—15° East Meridian.

† Highest recorded temperature.

†† Lowest recorded temperature.

Authorities :—Rome, R. Ufficio cent. meteor. geodin., Annali.
Eredia, F.—II precip. in Italia.
Eredia, F.—II temp. in Italia.

METEOROLOGICAL OFFICE,
AIR MINISTRY.

CHAPTER II

SOUTHERN COAST OF FRANCE—CAP CERBÈRE TO CAP COURONNE

CLIMATE AND WEATHER.—*See page 24.**Chart 1780.*

GULF OF LIONS.—**General remarks.**—The entrance to the Gulf of Lions lies between Cabo de Creus (*Lat. 42° 19' N., Long. 3° 20' E.*) and the western extremity of Îles d'Hyères, about 133 miles east-north-eastward, and the gulf extends about 60 miles north-north-westward between the Pyrénées and Alpes. In the fine-weather season, navigation in the gulf presents no great difficulty, but it is otherwise in winter, when there are gales and strong winds, *see page 24.*

Small low-powered craft should endeavour not to cross the gulf during strong easterly winds, but should such vessels be overtaken by them, they should make for the nearest of the following ports:—Bahia de Rosas, about 7 miles south-westward of Cabo de Creus, which affords shelter from nearly all winds; Puerto de la Selva, about 5 miles westward of Cabo de Creus, which affords shelter from all winds (these two ports are described in *Mediterranean Pilot, Vol. I*); Port Vendres, about 15 miles north-westward of Cabo de Creus, and Port de Sète, about 60 miles farther north-north-eastward and near the head of the gulf, which both afford shelter from all winds; Golfe de Saintes-Maries, about 35 miles eastward of Port de Sète, which is exposed to winds between south-east and east, and Golfe de Fos, about 20 miles eastward of Golfe de Saintes-Maries, which affords moderate shelter only.

Small low-powered craft proceeding to one of the above-mentioned ports in thick weather must allow for a west-going current, especially after easterly winds, and should sound constantly.

When approaching the gulf in foggy weather, or at night when too far from the coast to distinguish the lights, soundings are the main guide in determining the vessel's distance offshore, and the following remarks may be of assistance to mariners.

In the western part of the gulf, the 25-fathom (45^m7) line passes less than one mile off Cap Cerbère and Cap Béar and thence runs nearly parallel with the coast at a distance of from 4 to 5 miles offshore as far as Cap Leucate, about 30 miles northward of Cap Cerbère; it then approximately follows the contour of the coast at a distance of from 5 to 8 miles offshore and approaches to within one mile of Cap Couronne, about 90 miles east-north-eastward of Cap Leucate. South-eastward of Cap Couronne, the depths increase, the 100-fathom (182^m9) line passing between 2 and 15 miles offshore.

Charts 160, 2158a, 449.

Chart 1780.

Abreast Cap d'Agde, about 30 miles north-eastward of Cap Leucate, the 25-fathom (45^m7) line lies about 5 miles offshore, and in bad weather vessels should not approach into depths of less than 16 fathoms (29^m3); with gales from seaward, there is a very high sea off this part of the coast.

Off the mouth of the Rhône at the entrance to Golfe de Fos, and farther eastward, the depths at similar distances offshore are very much greater than is the case farther westward. Near the mouth of the Rhône, the colour of the water is often a useful guide, as it is of a dirty white colour up to a distance of from 8 to 10 miles offshore, merging into yellow near the coast, although this is scarcely apparent in a rough sea.

Chart 1804.

Coast.—Cap Cerbère to Cap Béar.—Aspect.—Cap Cerbère (Lat. 42° 26' N., Long. 3° 11' E.), the eastern termination of the rugged Chaîne des Albères, is formed by steep cliffs which rise abruptly to a plateau. From an offing, the cape has a triangular shape and on its summit is a small white building. It marks the frontier between Spain and France.

Between Cap Cerbère and Cap Béar, about 5 miles north-north-westward, the coast is steep, arid and rugged and is dominated by the eastern end of the Pyrénées, a ridge of high, dark and irregular mountains.

Vessels approaching from eastward may readily identify the dark mass of Cabo de Creus, although the light-structure on the cape does not show up clearly against a background of rocky slopes when seen from a great distance. About 1½ miles westward of Cabo de Creus, the two peaks of Dedos des Cadaqués, and about 5 miles farther westward, the peak of San Pedro de Roda, 2,260 feet (688^m8) high, and crowned with ruins, may also be distinguished. The rugged Chaîne des Albères, stretching westward and north-westward from Cap Cerbère, is prominent, as also is the snow-capped peak of Le Canigou, 9,138 feet (2,785^m0) high, about 30 miles north-westward of Cabo de Creus. See view on chart 1506 and views facing page 48.

Vessels approaching from north-eastward or south-eastward will find the light-structure and the signal station on Cap Béar to be good landmarks.

Lights.—Dangers.—Anse Cerbère, on the northern side of Cap Cerbère, affords shelter to small vessels from winds from north through west to south; the bottom is sandy and the holding ground good. The village of Cerbère stands at the head of the bay; a large custom house close southward, and a large white building close northward of the village, may assist in its identification. Tour Carroig (Carotj) stands on a hill about 2 miles westward of Cap Canadell, the northern entrance point of the bay.

A light is exhibited, at an elevation of 62 feet (18^m9), from a white metal column and hut, 16 feet (4^m9) in height, situated on the northern side of Anse Cerbère.

Rochers Canadell, two rocks about 7 feet (2^m1) high, lie about one cable off Cap Canadell with no safe passage in the narrow channel between them and the coast. Between Cap Canadell and Cap Peyrefite, about half a mile northward, is Anse Terrambou, an open bight which is never used as an anchorage. Anse Peyrefite, another open bight

Chart 1804.

between the cape of that name and Cap Rederis, about half a mile farther northward, is of little more use but may afford shelter to small craft during offshore winds in case of necessity. Basse Rederis, a rock with a least depth of 5 feet (1^m5) over it, lies about 1½ cables north-eastward of Cap Rederis. 5

Between Cap Rederis and Cap l'Abeille, about three-quarters of a mile north-north-westward, the coast is high, rugged and fringed with rocks. A rock, over which there is a depth of 2½ fathoms (5^m0), lies about 1½ cables eastward of Cap l'Abeille. 10

From Cap l'Abeille, the coast trends west-north-westward for about one mile to Cap Dosne (*Lat. 42° 29' N., Long. 3° 08' E.*), receding close south-eastward of the latter cape to form a bight named Baie de Banyuls, which is used by coasters only.

A light is exhibited, at an elevation of 58 feet (17^m7), from an iron post on a white stone tower, 16 feet (4^m9) in height, situated on Cap Dosne. 15

Baie de Banyuls contains two small sandy coves, Anse Fontaulé on the eastern, and Anse de Banyuls on the western side of the bay. Île Grosse, a rock 23 feet (7^m0) high, lies off the eastern entrance point of Anse Fontaulé, about three-quarters of a mile west-north-westward of Cap l'Abeille; a mole connects Île Grosse with the coast southward of it. Île Petite, a rock 10 feet (3^m0) high, lies about 1½ cables westward of Île Grosse. 20

Amongst other landmarks, the buildings in the town of Banyuls at the head of Anse de Banyuls; a railway viaduct with three arches; the hermitage of La Sallete, situated on a hill about 2 miles westward of Cap l'Abeille; and Cap Dosne, on which stands a yellow building, are all prominent. 25

Anchorage.—Directions.—During easterly and south-easterly winds, vessels can obtain anchorage in Anse Fontaulé, between Île Grosse and Île Petite, sheltered by the mole, in depths of 3½ fathoms (5^m9), weed. During northerly or north-westerly winds, anchorage may be obtained in Anse de Banyuls, eastward of the town, in depths of from 2½ to 3½ fathoms (5^m0 to 5^m9), weed. In the middle of the bay, the bottom is sandy. During offshore winds, moderate-sized vessels may obtain good anchorage in depths of about 6½ fathoms (11^m9), about a quarter of a mile eastward of Cap Dosne, with Cap Dosne light-structure bearing 225° and Cap Béar signal station (page 48) in line with Cap Llestreil bearing about 354°. Strong easterly winds raise a heavy sea, especially in Anse de Banyuls. 30 35 40

Vessels entering Baie de Banyuls must keep Tour de La Massane bearing more than 280° and open northward of Tour Madeloc, which leads northward of the rock off Cap l'Abeille; these two old towers stand on two peaks of Chaîne des Albères, 2,605 feet (794^m0) and 2,149 feet (655^m0) high, respectively, the former about 5½ miles and the latter 3½ miles west-north-westward of Cap l'Abeille. 45

Coast.—From Cap Dosne, the coast trends north-north-eastward for about one mile to Cap Llestreil (Oullestreil), a rugged and prominent headland. About the middle of this stretch is Cap Castell, close off which lies Castel Bayou, a detached perpendicular rock. 50

Anse de Paulilles is entered between Cap Llestreil and Cap Béar, about one mile north-north-eastward; it affords shelter in northerly winds to vessels unable to round Cap Béar, but it is exposed to heavy

Chart 1804.

rollers. The bottom is sandy, except for Basse de la Lioze, a rock with a depth of $2\frac{1}{2}$ fathoms (4^m7) over it, situated in the middle of the bay. At the head of the bay are three small beaches and within the centre
 5 beach is a dynamite factory with an iron pier which extends into a depth of about 18 feet (5^m5); the depths alongside the pier decrease rapidly towards the shore. Cap Béar (*Lat. $42^\circ 31' N.$, Long. $3^\circ 08' E.$*) is the eastern extremity of a rocky promontory, terminating in a black vertical cliff, about 30 feet (9^m1) high, from which the rugged land
 10 rises to an elevation of about 185 feet (56^m4), about a quarter of a mile westward.

Light. — Radiobeacon. — Signal station. — A light is exhibited, at an elevation of 259 feet (78^m9), from a red and grey square stone tower, 74 feet (22^m6) in height, situated about a quarter of a mile
 15 westward of the extremity of the cape. A radiobeacon transmits from a red and black pylon close to the light-structure.

A signal station is situated in a white building about $1\frac{1}{2}$ cables westward of the light-structure at an elevation of 270 feet (82^m3). Fort Béar, an old fortress, stands on the summit of the promontory, about
 20 4 cables farther westward. See view B on chart 1804 and view on chart 1506.

Chart 1506.

Port Vendres.—Lights.—Port Vendres, the eastern entrance point of which lies about one mile west-north-westward of Cap Béar,
 25 is small but affords good shelter to vessels of up to about 450 feet (137^m2) in length and 26 feet (7^m9) draught. The port lies at the foot of the eastern ranges of the Pyrénées and vessels approaching from seaward will, in fine weather, distinguish these ranges from a great distance. The coast, which northward of the port is low and flat, rises
 30 abruptly as it turns eastward and forms a distinctive promontory terminating in Cap Béar. Prominent landmarks in this vicinity are Tour de la Massane and Tour Madeloc (page 47), the light-structure and signal station on Cap Béar, and Fort Saint Elme, situated on a peak about half a mile westward of the harbour of Port Vendres. Vessels
 35 approaching from southward, having rounded Cap Béar, will easily identify Redoute du Fanal light-structure on the western side of the harbour entrance.

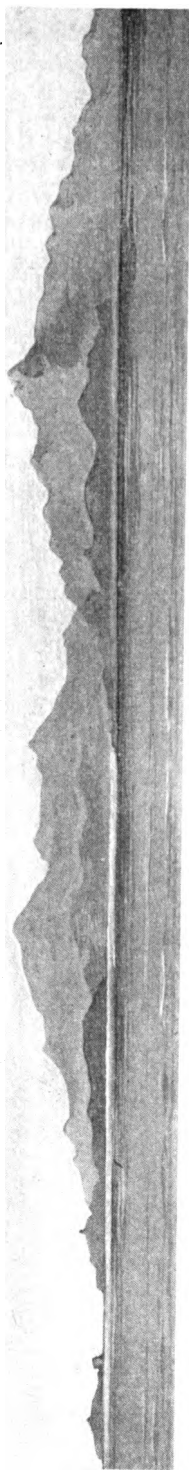
The harbour is entered between the head of a breakwater which projects about $1\frac{1}{2}$ cables north-westward from the coast about one
 40 mile west-north-westward of Cap Béar, and Pointe du Fanal, about 2 cables south-westward. Close within Pointe du Fanal (*Lat. $42^\circ 31' N.$, Long. $3^\circ 07' E.$*) is a fort named Redoute du Fanal, and there are other forts on the south-eastern side of the harbour, south-eastward and southward of Pointe du Fanal.

45 A light is exhibited, at an elevation of 68 feet (20^m7), from a white iron framework structure, 52 feet (16^m2) in height, situated at the head of the breakwater.

A light is exhibited, at an elevation of 95 feet (29^m0), from a grey square tower and dwelling, 54 feet (16^m5) in height, situated in Redoute
 50 du Fanal.

A light is exhibited from a masonry tower, the upper part painted white and the lower part black, surmounted by a black cone, point up, situated about a quarter of a cable eastward of the light-structure in Redoute du Fanal.

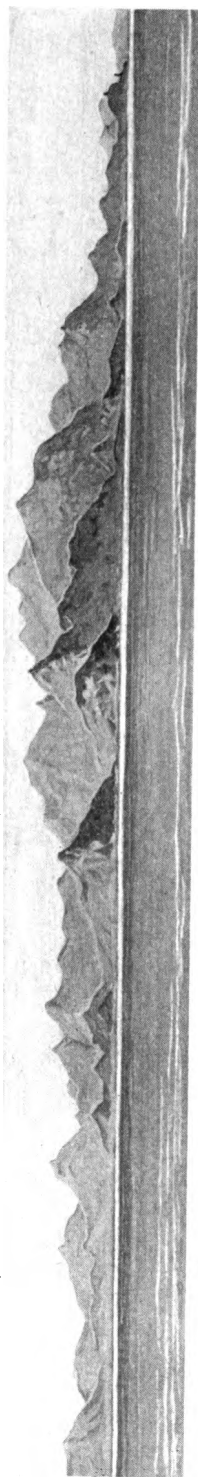
Charts 1780, 160, 2158a, 449.



Cabo de Creus.

Dedos des Cadaqués.

Mt. San Pedro de Roda.



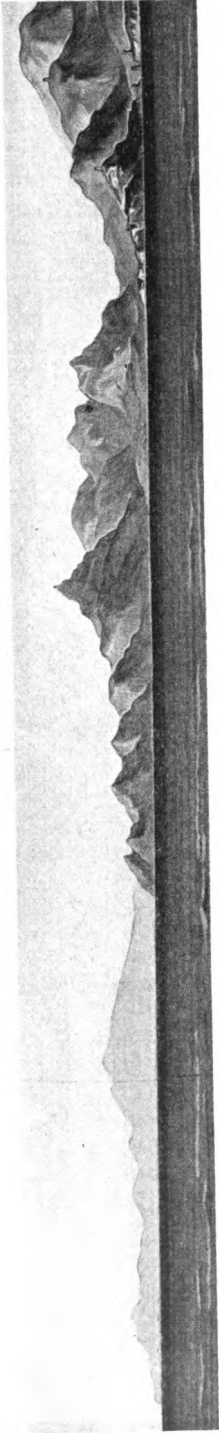
Tour Carrog.
Mt. Canigou
(in cloud).

Tour
Madeloc.

Fort St.
Elme.

Signal
station.

View, in two parts, from a position 13 miles east-south-eastward of Cap Béar.
(Original dated 1905.)



Mt. San Pedro de Roda.

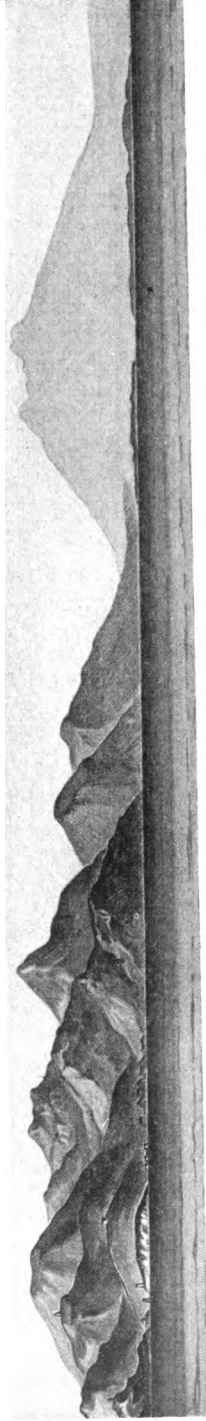
Tour Carroig.

Cap Biar.
(Lighthouse and signal station
not shown in view.)

a Port Vendres.

Dedos des
Cadaqués.

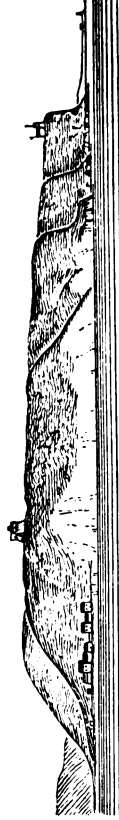
a Tour Madeloc.



a Port Vendres.

Mt. Canigou.

View, in two parts, from a position 9 miles north-eastward of Cap Béar.
(Original dated 1905.)



Barcarès Leucate, distant 24 cables.
Fort des Matles.

Signal station
(disused).
bearing 353°.

La Nouvelle
lighthouse.

Cap Leucate from southward.
(Original dated 1876.)

Chart 1506.

Leading lights have been established on the south-eastern shore of the harbour. The front light is exhibited at an elevation of 36 feet (11^m0), from a small tower on black supports, 16 feet (4^m9) in height, situated at the foot of Redoute Béar, about 1½ cables southward of Redoute du Fanal light-structure; the rear light is exhibited at an elevation of 68 feet (20^m7), from a wooden structure situated about one cable south-south-westward of the front light. These two lights in line, bearing 197°, lead from seaward through the entrance to the port.

Quayage.—Depths.—The harbour consists of three basins, Avant Port, Vieux Port and Port Neuf (Nouvelle Darse). Avant Port extends about 3 cables south-westward from the entrance to Pointe des Pilotes, situated on the northern shore about 1½ cables south-westward of Pointe du Fanal, and Pointe de la Presqu'île, on the southern shore, about 1½ cables south-westward of Pointe des Pilotes. There are depths in the fairway of Avant Port of from 26 to 52 feet (7^m9 to 15^m8), but a bank on which the depths are less than 16 feet (4^m9) fringes the southern shore, extending as much as a quarter of a cable offshore at the foot of Redoute Béar.

Vieux Port, also called Bassin de l'Obelisque, extends westward 20 from Pointe des Pilotes on the northern side of the harbour. It is exposed to north-westerly winds which often blow violently down a valley at its head. There are 1,738 feet (529^m7) of quayage in Vieux Port, with depths alongside of from 13 to 20 feet (4^m0 to 6^m1), except at the quays on the northern side, alongside which there are depths of 25 only 10 feet (3^m0).

Port Neuf, also called Bassin de Castellane, is situated at the head of the harbour, separated from Avant Port by Pointe de la Presqu'île, on which there is a square tower. Port Neuf contains about 2,500 feet (762^m0) of easily accessible quayage, with depths alongside of from 23 to 30 feet (7^m0 to 9^m1).

Pilotage.—Movements signals.—Pilotage is obligatory and pilots are always available. The pilot station is situated close within Pointe des Pilotes (*Lat.* 42° 31' N., *Long.* 3° 07' E.).

Signals regulating entry and departure (page 10) are displayed 35 from an iron framework tower, 79 feet (24^m1) in height, painted in red and white horizontal bands and situated about half a cable north-westward of Redoute du Fanal light-structure.

Anchorage. — Quarantine anchorage. — Anchorage, with good holding ground, may be obtained off the harbour entrance, in depths of about 22 fathoms (40^m2), with a steeple at Collioure (page 51) bearing less than 270°, in an area the western limit of which is formed by Redoute du Fanal light-structure in line with the rear leading light-structure, and the eastern limit by Redoute du Fanal light-structure in line with Tour Madeloc. Outside these limits, the bottom is rocky 45 and the holding ground bad.

At night, vessels should anchor just within the western limit, with Cap Béar light bearing between 130° and 140°.

Vessels in quarantine moor in Avant Port, eastward of Pointe de la Presqu'île. As this anchorage is exposed to north-westerly winds blowing out of Vieux Port, vessels should moor with two anchors ahead, 50 securing the stern with hawsers to mooring posts at the foot of Redoute Béar.

Directions.—Vessels entering Port Vendres should keep the leading

Charts 1804, 1780, 160, 2158a, 449.

Chart 1506.

light-structures in line, bearing 197° , until abreast of Pointe du Fanal. Vessels from southward should give the head of the breakwater a wide berth when rounding it.

- 5 During northerly winds the current sets south-eastward, and vessels should keep slightly south-westward of the leading line. During strong winds, especially those from north-westward, great care is necessary when turning the vessel in the harbour.

It is reported that berthing alongside the quays at night is difficult owing to the absence of illumination.

- Town.—Port facilities.**—The town of Port Vendres lies on the northern side of the harbour and extends between Vieux Port and Port Neuf; the harbour offices are situated on Quai François Joly (*Lat. $42^{\circ} 31' N.$, Long. $3^{\circ} 06' E.$*), on the western side of Port Neuf.

15 In 1948, the population was about 4,000.

Cargo is discharged by ship's appliances and there are only two cranes in the port, a 2-ton crane on the northern side of Vieux Port and a $1\frac{1}{2}$ -ton mobile crane.

A small amount of coal is normally kept in stock. Fresh water is available alongside the quays.

The town is served by the railway and there is regular sea communication with Marseille, North African and other Mediterranean ports.

Chart 1804.

- 25 **Coast.—Cap Béar to Cap d'Agde.—Aspect.—Currents.**—

Vessels approaching the coast between Cap Béar and Cap d'Agde, about 48 miles north-north-eastward, will first sight the snow-capped peak of Le Canigou and Montagnes des Corbières. Vessels southward of the parallel of Cap Leucate, situated about 24 miles northward of

- 30 Cap Béar, will next distinguish the high plateau of La Galère, about 17 miles westward of Cap Leucate. Vessels northward of the parallel of Cap Leucate should distinguish Plateau de Guiraud, the north-eastern extremity of Montagnes des Corbières, which marks the position of La Nouvelle, situated about 6 miles northward of Cap Leucate.
- 35 Farther northward may be seen Montagnes de la Clape, situated close within the coast about 8 miles north-north-eastward of La Nouvelle, and the isolated and conical Mont d'Agde, on which stands a disused signal station, about $1\frac{1}{2}$ miles northward of Cap d'Agde.

- Vessels approaching from eastward should first distinguish Mont de Sète, also known as Mont Saint Clair, on which stands Pilier Saint Clair, a white tower, situated about $10\frac{1}{2}$ miles north-eastward of Cap d'Agde; they should next sight Mont d'Agde, about 2 miles southward of which is Îlot Brescou, on which is a fort of the same name.

- 45 Visibility is often rather poor in this vicinity, especially during easterly winds; in thick weather, vessels should sound constantly when within depths of 30 fathoms (54^m9) and should not approach the coast within depths of 16 fathoms (29^m3).

- The currents are scarcely perceptible during the summer, but during the winter they set southward and south-eastward during northerly winds and eastward or north-eastward during offshore or west-north-
- 50 westerly winds.

Baie de Collioure. — Light. — Anchorage. — Directions. —

From Pointe du Fanal the coast trends west-north-westward for about 4 cables to Cap Gros, which is high and rugged, and then trends west-

Charts 1804, 1780, 160, 2158a, 449.

Chart 1804.

ward for about three-quarters of a mile to Pointe del Mich, the south-eastern entrance point of Baie de Collioure; the latter point may be readily identified by Fort Saint Elme, about half a mile south-eastward, and by Fort Miradoux, close north-westward of it. The bay affords temporary shelter during winds between south-west and north. It is entered between Pointe del Mich and Presqu'île Saint Vincent, about $1\frac{1}{2}$ cables north-westward. Presqu'île Saint Vincent is fringed with rocks which extend as much as 200 feet (61^m0) south-eastward; a breakwater projects from the south-eastern extremity of Presqu'île Saint Vincent (*Lat.* 42° 32' N., *Long.* 3° 05' E.) to the outermost of these rocks. 5 10

A light is exhibited, at an elevation of 43 feet (13^m1), from a black metal column situated on the head of the breakwater.

There is anchorage in depths of 20 feet (6^m1), sand, southward of Presqu'île Saint Vincent. The bay is only used by fishing boats and coasters, and winds between north-east and east-south-east are very dangerous; it is not safe to spend a night at the anchorage during these winds. 15

When the entrance to the bay has been opened, vessels will readily identify a chapel on the summit of Presqu'île Saint Vincent, the round tower of an old church in the town, and a citadel at the head of the bay. Tour de la Massane, in line with the southernmost extremity of the citadel at the head of the bay, leads to the anchorage. 20

Coast. — Landmarks. — Lights. — Anchorage. — From Presqu'île Saint Vincent, the rocky coast trends west-north-westward and gradually decreases in elevation for about $1\frac{1}{2}$ miles to Colline d'En Sourre, a hill on which are the ruins of a mill; the coast then turns northward and becomes low and flat for about 23 miles to Cap Leucate. 25

Cap Leucate is a prominent, flat-topped and whitish-coloured point, rising steeply from the sea to an elevation of 171 feet (52^m1). A dismantled signal station, consisting of a white house and tower with a black flagstaff, stands on the edge of the cliff at Cap Leucate. About one mile farther southward is Fort des Mattes, a small, disused, square building. See view facing page 49. 30 35

The following landmarks may be identified within this stretch of coast:—A high, square steeple at Argelès, about 3 miles west-north-westward of Collioure; a church with two towers at Elne, about 4 miles farther north-north-westward; a reddish-coloured steeple close southward of a mill at Canet, situated about $6\frac{1}{2}$ miles northward of Elne, and a high tower surmounted by bell turrets at Perpignam, about 7 miles north-westward of Elne. On the coast eastward of Canet, may be seen the baths of Saint Pierre and numerous houses; the turreted Château Saint Pierre, rising above a clump of trees about midway between Canet and Saint Nazaire, about $2\frac{1}{2}$ miles southward; the village of Barcarès de Saint Laurent, situated on the coast about 5 miles north-north-eastward of Canet and on the northern side of Rivière de l'Agly (Agli), and a large and prominent yellow square water tower, situated close southward of the steeple of a church in Saint Laurent de la Salanque, a village about 2 miles westward of the mouth of the Agly. 40 45 50

A light for the use of aircraft is occasionally exhibited, at an elevation of 233 feet (71^m0), from a position about 2 miles north-westward of Perpignam.

Charts 1780, 160, 2158a, 449.

Chart 1804.

A light is exhibited, at an elevation of 25 feet (7^m6), from a white framework structure on an iron hut, 23 feet (7^m0) in height, situated on the coast in front of the village of Barcarès de Saint Laurent (*Lat.* 5 42° 47' N., *Long.* 3° 02' E.).

This stretch of coast is free from dangers and the bottom generally is sand or sand and mud, but there are some rocky patches within about 4 miles of the coast, with depths of from 11 to 18 fathoms (20^m1 to 32^m9) over them. There are depths of from 11 to 14 fathoms (20^m1 to 25^m6), about one mile offshore, and, during offshore winds, vessels can anchor anywhere avoiding the rocky patches. Small vessels can anchor in depths of 3½ fathoms (5^m9), sand and mud, abreast the village of Barcarès de Saint Laurent, but vessels should be ready to weigh immediately should the wind shift to easterly or south-easterly.

15 **Coast.—Banc de la Franqui.—Anchorage.**—Between Cap Leucate and the entrance to La Nouvelle, about 6 miles northward, the coast consists of a regular sandy beach backed by sand dunes. Pointe des Frères lies about 6 cables north-westward of Cap Leucate and from this point, Banc de la Franqui, over which there are depths of from 6 to 20 10 feet (1^m8 to 3^m0), extends about 7 cables north-westward. About half a mile west-north-westward of Pointe des Frères is the high ruined battery of La Franqui.

Vessels of a draught not exceeding 10 feet (3^m0) may obtain anchorage in depths of from 16 to 20 feet (4^m9 to 6^m1), fine sand, about 25 4 cables northward of La Franqui battery and about 220 yards (201^m2) offshore.

La Nouvelle. — Lights. — Buoy. — Pilotage. — The harbour of La Nouvelle is formed by a canal which connects Étang de Sigeau with the sea; at its mouth, the canal is prolonged by two jetties which 30 extend into depths of 16 and 20 feet (4^m9 and 6^m1), respectively. Vessels approaching from seaward may distinguish from a distance the buildings of the town on the southern side of the entrance, with the flagstaff and tower of Fort Saint Charles prominent among them and, on the northern side, a large sanatorium, which is very prominent. 35 Numerous oil tanks may also be seen both northward and southward of the entrance.

The port is accessible at all seasons in calm weather to vessels of a draught of not more than 17 feet (5^m1). A period of south-easterly winds raises the sea level in the harbour and a rise of as much as 5 feet 40 (1^m5) has been recorded. The channel and Avant Port are dredged each spring to a depth of 20 feet (6^m1), but onshore winds cause silting and this depth cannot be relied on with certainty. During strong easterly and south-easterly winds, the sea breaks from 1½ to 2 cables off the entrance to the port and entry is impracticable, the passage 45 over the bar being then very dangerous.

A light is exhibited, at an elevation of 75 feet (22^m9), from a white tower with red bands at the head of the southern jetty.

A light is exhibited, at an elevation of 34 feet (10^m4), from a black iron column, 23 feet (7^m0) in height, situated at the head of the northern 50 jetty.

A buoy, painted white and with a conical topmark, is moored about three-quarters of a mile eastward of the head of the northern jetty and marks a spoil ground.

Pilotage is obligatory. The pilot station is situated at Fort Saint

Charts 1780, 160, 2158a, 449.

Chart 1804.

Charles (*Lat.* 43° 01' N., *Long.* 3° 04' E.). When entry is impracticable, a red flag is displayed at the pilot station in answer to a vessel requesting a pilot.

Depths. — **Port facilities.** — **Life-saving.** — The canal is about 1½ miles long and 200 feet (61^m0) wide at the surface and 100 feet (30^m5) at the bottom; the width between the jetties is 110 yards (100^m6). Vessels should keep in mid-channel when in the canal as the banks on either side are fringed by shoals extending about 50 feet (15^m2) offshore. 5 10

About one mile within the entrance, a basin where vessels may turn has been formed on the northern side of the canal. It is about 240 yards (219^m5) long and 132 yards (120^m7) wide, and vessels normally secure to the quay on the northern side of the basin which is served by the railway. Two berths, one on each side of the canal, are reserved for tankers and are connected to oil tanks by pipe-line. On the eastern side of the basin is a slipway, capable of taking vessels up to 165 feet (50^m3) in length. 15

On the southern side of the canal, a length of about 200 feet (61^m0) of the south bank opposite the basin, is foul owing to blocks of stone from a destroyed quay, and the vicinity should be given a wide berth. The limits of the foul part are marked by beacons.

The town of La Nouvelle is situated on the southern bank of the canal; in 1948, the population was about 2,000. Fresh water is available alongside the quays, and both fuel oil and petrol is normally stocked. 25

There are two mobile 6-ton cranes on the quays and a small tug is available.

A pulling lifeboat is maintained at La Nouvelle.

Directions.—During southerly winds, it is advisable to make the land southward of the entrance and thence to shape course for the head of the northern jetty, giving the southern jetty a wide berth. During northerly winds, vessels should approach the entrance a little to windward. 30

Coast. — **Landmarks.** — **Life-saving.** — About 2½ miles north-north-eastward of the entrance to La Nouvelle, the sandy beach is broken by the entrance to Grau de la Vieille Nouvelle, which is marked by an old tower and by several houses. An old mill at Gruissan, about 3 miles farther northward, is very prominent. 35

A line-throwing apparatus is maintained at La Vieille Nouvelle. 40

Rocher de Saint Pierre, 16 feet (4^m9) high and surmounted by the sand-covered ruins of a battery stands about 6 miles north-eastward of Gruissan and is the most distinctive mark in the vicinity, while about 2 miles farther north-eastward and one mile southward of the estuary of Rivière de l'Aude, stands Tour de Vendres, isolated and greyish in colour. 45

This stretch of coast is free from dangers, but several rocks fringe its rocky parts. Bancs de Roches de Vendres, with depths of from 10 to 11 fathoms (18^m3 to 20^m1) over them, lie about 2 miles eastward of Tour de Vendres. During offshore winds, anchorage may be obtained anywhere off the coast between Cap Leucate and the mouth of l'Aude, avoiding Bancs de Roches de Vendres. 50

Entrance to Rivière de l'Orb. — **Lights.** — **Life-saving.** — Rivière de l'Orb flows into the sea between embankments about

Charts 1780, 160, 2158a, 449.

Chart 1804.

4½ miles north-eastward of Tour de Vendres. At its mouth is the resort of Valras Plage, in which the Casino and a large water tower form excellent landmarks.

- 5 A light is exhibited, at an elevation of 30 feet (9^m1) from a mast situated at the head of the western embankment. This light is liable to damage.

A pulling lifeboat is stationed at Valras Plage.

- Coast.**—About 6 miles east-north-eastward of the mouth of l'Orb, 10 the sand dunes are broken by Trou de Vias (*Lat.* 43° 17' N., *Long.* 3° 26' E.), which marks the entrance to a small lagoon, beyond which, a black, pointed steeple may be distinguished at Vias, and, farther northward, a large white mansion surrounded by trees. From Trou de Vias, the coast curves south-eastward for about 6 cables to the 15 mouth of Rivière de l'Hérault.

Rivière de l'Hérault. — Lights. — Pilotage. — Life-saving. —

- The entrance to this river, which gives access to the port of Agde, may be identified by Mont d'Agde, about 2¾ miles east-north-eastward, by Fort Brescou, on an islet of the same name, about a similar distance 20 east-south-eastward, by two radio towers, situated close together about 1½ miles east-north-eastward of the entrance, and by the light-structures on the heads of the two jetties between which it enters the sea. It is about half a cable wide.

- The town of Agde is situated about 2½ miles above the entrance and a 25 suspension bridge crosses the river abreast the town, above which the river is connected with Canal du Midi. There is swinging room abreast the town for vessels up to 150 feet (45^m7) in length.

A light is exhibited, at an elevation of 31 feet (9^m4) from a white stone tower on the head of the western jetty.

- 30 A light is exhibited, at an elevation of 41 feet (12^m5), from a white stone tower 26 feet (7^m9) in height, situated on the head of the eastern jetty.

A light for the use of aircraft is exhibited from each of two radio towers, situated about 1¾ miles east-north-eastward of the entrance to

- 35 Rivière de l'Hérault.

Pilotage is necessary. The pilot station is situated on the eastern bank of the river, about 2¼ cables northward of the head of the eastern jetty.

- A motor lifeboat is stationed at Grau d'Agde, situated close north- 40 ward of the eastern jetty.

Dangers.—The gravel brought down by the river forms a bank extending about 3¼ cables southward from the heads of the jetties. Depths of 10 feet (3^m0) extend about 4 cables 190° from the light-structure at the head of the western jetty.

- 45 Between the river entrance and Îlot Brescou, about 2¾ miles east-south-eastward, the coast is fringed by rocky ledges extending as much as half a mile offshore in places.

- Directions. — Anchorage. — Port facilities. —** From a position with the light-structure on the eastern jetty, bearing 000°, and Fort 50 Brescou, bearing 090°, vessels should shape course for the former until within half a cable of it, whence a mid-channel course should be steered. There are depths of from 10 to 13 feet (3^m0 to 4^m0) on this approach track. In general, the channel in the river lies on the concave bank, but along the banks are posts, some of which, in groups of

Charts 1780, 160, 2158a, 449.

Chart 1804.

three, are painted white, and vessels should hug the bank marked by these white posts.

Vessels can anchor in the river or proceed as far as the suspension bridge at Agde. There is good anchorage abreast Le Saint Christ, situated on the eastern bank about $1\frac{1}{2}$ miles above the entrance and marked by a cross. At Agde, vessels should drop the starboard anchor in mid-stream and then should secure alongside the western bank.

Small quantities of fresh water and of petrol are available. There is a hospital at Agde.

Cap d'Agde and approaches.—Aspect.—Between the mouth of l'Hérault and Cap d'Agde (*Lat.* $43^{\circ} 17' N.$, *Long.* $3^{\circ} 31' E.$) about 3 miles eastward, the coast is fringed by rocks and rocky points; about midway along this stretch is Pointe de Roche Longue, on which is an old battery. Viewed from westward, Cap d'Agde appears to slope gradually to a low rocky point; rocks with less than 6 feet (1^m8) over them extend about a quarter of a mile southward from the cape. Môle de Richelieu, partly in ruins, projects about $3\frac{1}{2}$ cables south-westward from a position about 2 cables westward of Cap d'Agde, and the low coast between them is fringed by a shoal bank extending as much as 4 cables offshore. Mont d'Agde, a conical hill, 377 feet (114^m9) high, with the white house and tower of a dismantled signal station on its summit, stands about $1\frac{1}{2}$ miles north-north-westward of the cape.

Charts 1804, 1805, 1780.

On a clear day, vessels approaching from southward on about the meridian of Cap d'Agde should sight the following landmarks: To the west, the Pyrénées, with the snow-capped peak of Le Canigou; to the north, the Cévennes, with Gros Frère, situated about 29 miles northward of Cap d'Agde, and Pic de Saint Loup, 2,160 feet (658^m4) high, about 15 miles farther eastward, and to the north-west, Mont Ventoux of the Alpes Dauphinoises, 6,273 feet ($1,912^m0$) high and situated nearly 70 miles east-north-eastward of Pic de Saint Loup. When about a dozen miles from the coast, Mont d'Agde and Mont de Sète may be distinguished.

Vessels approaching from eastward will sight Mont Bauzille (Bauzéli), a hill, 614 feet (185^m1) high, on which stands a ruined chapel, situated about 9 miles north-north-eastward of Mont de Sète, and the small town of Frontignam, about 4 miles north-eastward of Sète.

Chart 1804.

Light.—Beacon.—Anchorage.—Fort Brescou (*Lat.* $43^{\circ} 16' N.$, *Long.* $3^{\circ} 30' E.$) is situated on Îlot Brescou, a flat rock lying about 9 cables south-westward of Cap d'Agde; the passage between the islet and the coast is almost closed by rocks and should not be attempted. The islet is surrounded by dangers of which la Roche l'Âne, lying about one cable south-westward of it, is the southernmost, and passing vessels should give the islet a berth of at least 3 cables.

A light is exhibited at an elevation of 69 feet (21^m0), from a white circular tower, 37 feet (11^m3) in height, situated on an old magazine close southward of Fort Brescou.

A beacon, consisting of a masonry tower, painted in red and black horizontal bands and surmounted by a red ball, 22 feet (6^m7) high, stands on La Lauze (Aloze), a rock about $3\frac{1}{2}$ cables north-eastward of Îlot Brescou.

Charts, 160 2158a, 449.

Chart 1804.

During southerly or south-westerly winds, small vessels may obtain anchorage in Rade de Brescou, about 2 cables northward of the islet, in depths of from $2\frac{3}{4}$ to $3\frac{1}{4}$ fathoms (5^m0 to 5^m9), sand and weed.

- 5 Easterly and south-easterly winds, if strong, send in a considerable sea. The current usually sets westward and does not exceed a rate of 2 knots. Vessels can approach the anchorage either northward or southward of La Lauze, but the latter passage is preferable, taking care to avoid the rocks off the eastern end of Îlot Brescou.
- 10 During westerly and north-westerly winds, vessels may obtain anchorage in depths of from $2\frac{3}{4}$ to $3\frac{1}{4}$ fathoms (5^m0 to 5^m9), sand and rock, bad holding ground, at La Conque, a slight bight on the northern side of Cap d'Agde. Vessels should anchor about $3\frac{1}{2}$ cables north-eastward of the extremity of the cape, with the dismantled signal
- 15 station on Mont d'Agde in line with a custom house on the shore of La Conque, bearing 326° , and La Lauze beacon, bearing 223° , and open south-eastward of Îlot Brescou. In 1949, this anchorage was in a mined area.

Coast.—Cap d'Agde to Cap de Sète.—Offshore depths.—

- 20 Between Cap d'Agde and Cap de Sète, about 11 miles north-eastward, the coast consists of a low and narrow beach separating Étang de Thau from the sea. It is backed on the inner side of Étang de Thau by a range of hills at the foot of which can be seen the steeples of Marseillan and Mèze, about 5 miles northward and 10 miles north-
- 25 north-eastward, respectively, of Cap d'Agde. On the coast, about $4\frac{1}{2}$ miles north-eastward of Cap d'Agde, is an old square tower named Castellàs, and about $3\frac{1}{2}$ miles farther north-eastward is Villeroy, its castle, warehouses and salt pans, the latter being about another $1\frac{1}{2}$ miles north-eastward and at the foot of Mont de Sète. This latter
- 30 hill, also known as Mont Saint Clair, is 509 feet (179^m8) high, and on its summit stands Pilier Saint Clair, a prominent white tower.

- The offshore depths are regular along the above stretch of coast, and if the land is obscured during south-easterly winds, they are sufficiently uniform to allow 11 fathoms (20^m1) when sounding, for every 3 miles
- 35 offshore; for example, 6 miles offshore, the depths are about 22 fathoms (40^m2), mud and sand. In depths of less than 11 fathoms (20^m1), the bottom is sand mixed with gravel except southward of Mont de Sète, where it is rocky for about half a mile offshore.

Chart 1805, plan of Port of Sète.

- 40 **PORT DE SÈTE.—Aspect.**—The town and port of Sète (Lat. $43^\circ 24' N.$, Long. $3^\circ 42' E.$) is situated at the foot of the eastern slopes of Mont de Sète, which, crowned with Pilier Saint Clair, dominates the neighbourhood, *see* view on plan of Port of Sète on chart 1805. Citadelle Richelieu stands on the south-eastern slopes of Mont de Sète
- 45 with Mont Saint Clair light-structure close southward of it. Landmarks which are prominent from seaward are a steeple in the town surmounted by a gilded figure of the Virgin, the breakwater, and the buildings around the harbour. Montagne de la Gardiole, between 591 and 787 feet (180^m1 and 239^m9) high, stretching between about
- 50 4 and 10 miles north-eastward of the town, terminates at Mont Bauzille, a distinctive peak with a ruined chapel on it. At Frontignam, about $3\frac{1}{2}$ miles north-eastward of the town, may be seen a large square steeple and numerous oil tanks.

Charts 1780, 160, 2158a, 449.

Chart 1805, plan of Port of Sète.

Harbour. — Depths. — Lights. — Radiobeacon. — Port de Sète is sheltered seaward by two jetties, Môle Saint Louis on the western side of the entrance, and Jetée de Frontignam on the eastern side; and a short distance southward of the heads of the jetties, a breakwater, prolonged by two arms, Épi de l'Ouest and Épi Dellon, stretches across the entrance. The harbour consists of Avant Port, an outer port leading northward to Nouveau Bassin and Canal Maritime, and westward to Ancien Bassin, Canal de Sète and Étang de Thau. At the north-eastern corner of Avant Port is Bassin aux Pétroles. Canal de la Peyrade and Canal Lateral are cross channels connecting Canal Maritime and Canal de Sète. In 1948, the harbour was available to vessels up to 460 feet (140^m2) in length; 65 feet (19^m8) beam and 23 feet (7^m0) draught. In 1949, it was reported that the approach channel, Avant Port, Nouveau Bassin and Bassin aux Pétroles had been dredged to a depth of 30 feet (9^m1).

Mont Saint Clair light is exhibited, at an elevation of 303 feet (92^m3), from a white octagonal stone tower, 62 feet (18^m9) in height, situated on the south-eastern slopes of Mont de Sète. A radiobeacon transmits from the light-structure.

A light is exhibited, at an elevation of 65 feet (19^m8), from a metal framework structure, 49 feet (14^m9) in height, situated on the head of Môle Saint Louis.

A light is exhibited, at an elevation of 46 feet (14^m0), from an iron tower, the upper part painted white and the lower part black, 20 feet (6^m1) in height, situated on the eastern extremity of the breakwater.

A light is exhibited, at an elevation of 69 feet (21^m0), from a circular tower, the upper part painted black and the lower part white, 66 feet (20^m1) in height, situated on the eastern extremity of Épi Dellon.

A light is exhibited, at an elevation of 44 feet (13^m4), from a white iron tower, the upper part painted red, 33 feet (10^m1) in height, situated on the head of Jetée de Frontignam.

A light is exhibited from each of two white iron huts, situated one each side of the entrance to Nouveau Bassin.

Sea pipe-line oiling berth. — Light-and-whistle-buoy. — About 11 cables east-north-eastward of Épi Dellon light-structure there is a berth for vessels discharging fuel oil, which is connected to the coast north-north-eastward by a pipe-line. There are mooring buoys to which vessels using the berth secure bow and stern, heading south-eastward. At night, the alignment of two lights on the coast southward of Frontignam, indicate the axis of the pipe-line.

A conical light-buoy, painted black and surmounted by a cone, and exhibiting a *green flashing light every six seconds*, is moored close south-westward of the mooring berth, about one mile eastward of Épi Dellon light-structure (*Lat. 43° 24' N., Long. 3° 43' E.*).

Dangers.—Beacon.—Caution.—A shoal bank, on which there is a least depth of 17 feet (5^m2), extends about 400 feet (121^m9) southward from the extremity of Jetée de Frontignam.

A beacon stands near the edge of a shoal bank which extends from the head of Môle Saint Louis, about half a cable south-eastward of the light-structure on the head of the mole.

In 1948, the western entrance to the port was partly blocked by an obstruction between Môle Saint Louis and Épi de l'Ouest, and entry by this channel was confined to small craft with the aid of a pilot.

Charts 1805, 1780, 160, 2158a, 449.

Chart 1805, plan of Port of Sète.

Pilotage.—Signal station.—Pilotage is obligatory within an area extending one mile seaward of the breakwater between the alignments of Mont Bauzille and the prominent steeple at Frontignam on the east, and Pointe de Lazaret, about 9 cables south-westward of Pilier Saint Clair and the salt pans at Villeroy on the west. The pilotage zone also includes the whole expanse of Étang de Thau. The pilotage station is situated on Môle Saint Louis and there are several pilots.

A signal station is provisionally (1949) established close to Citadelle Richelieu in place of the former station on Mont de Sète which is destroyed. It is proposed to reconstruct the station in its former position.

Current.—Sea level.—In the entrance channels, the current usually sets south-westward and sometimes attains a rate of some 3 to 4 knots. With fresh north-westerly winds, the water flows out of Étang de Thau, and with winds from seaward, flows into that lagoon; this movement may attain a rate of some 3 to 4 knots.

The sea level in the harbour does not usually vary more than about 8 inches (9^m2), but larger movements, amounting to over 3½ feet (1^m0) have occasionally been observed.

Directions.—Port de Sète may normally be entered either by Passe de l'Est or Passe de l'Ouest, but, as stated above, in 1948 the latter entrance was only available to small craft with local knowledge, owing to obstructions.

Vessels using Passe de l'Est should approach the entrance with the breakwater light-structure bearing 253° and in line with Cap de Sète, which leads southward of a shoal bank fringing the coast abreast Frontignam and about half a cable northward of Épi Dellon light-structure. When the latter light-structure is abeam, they should shape course parallel with Épi Dellon and about half a cable from it, passing a similar distance off the breakwater light-structure and taking care to avoid the shoal bank extending southward from the head of Jetée de Frontignam. At night, vessels must keep southward of the alignment of the lights on the heads of Môle Saint Louis and Jetée de Frontignam.

During strong south-easterly winds, the pilot and tugs await vessels under the lee of Jetée de Frontignam. Vessels entering under these conditions, after having rounded the eastern extremity of Épi Dellon (Lat. 43° 24' N., Long. 3° 43' E.) with wind and sea astern, should head for the southern side of the entrance as quickly as possible. Vessels entering with the current should just keep steerage way and should let go the starboard anchor as soon as they pass the light-structure on the head of Jetée de Frontignam, then, sheering to starboard, they should drop the port anchor under the lee of the jetty. It will then be possible to embark the pilot.

Basins and quaysage.—Avant Port.—The entrance to Avant Port is 300 yards (274^m3) wide between the heads of Môle Saint Louis and Jetée de Frontignam and it had depths of 30 feet (9^m1) in 1949. Avant Port has no quays and is mainly used by vessels proceeding through it to the inner basins, but occasionally vessels moor there, dropping two anchors ahead and securing the stern to the jetty on the south-western side of the entrance to Nouveau Bassin; vessels thus moored can work cargo in nearly all weather.

Bassin aux Pétroles.—This basin is situated at the north-eastern

Charts 1805, 1780, 160, 2158a, 449.

Chart 1805, plan of Port of Sète.

corner of Avant Port from which it is separated by a mole, 656 feet (199^m9) long, which extends parallel with the eastern side of the basin. Bassin aux Pétroles is reserved for tankers and vessels with dangerous cargoes. There are depths of 30 feet (9^m1) in the basin and there is about 1,000 feet (304^m6) of quayage alongside which tankers can discharge oil at a rate of 3,000 tons in 24 hours. Deep-draught vessels can discharge over pontoons berthed alongside the quays.

Nouveau Bassin and Canal Maritime.—Nouveau Bassin is entered between two moles at the heads of which stand light-structures; the width of the entrance is about 60 yards (54^m9). There are depths of 30 feet (9^m1) in the middle of the basin and average depths of 24 feet (7^m3) in other parts but alongside the quays forming its sides, the depths vary from 7 to 20 feet (2^m1 to 6^m1). In 1950, it was reported that the quays in Nouveau Bassin could not be used owing to work in progress constructing Bassin de la Méditerranée, *see* below.

Canal Maritime extends northward out of Nouveau Bassin for about half a mile to Canal Lateral. It has a width of 230 feet (70^m1), except where crossed by two swing bridges, where the navigable width is reduced to 100 feet (30^m5). There is a least depth of 24 feet (7^m3) in the middle of the canal and of from 20 to 26 feet (6^m1 to 7^m9) alongside the quays, which are the berths usually occupied by sea-going vessels.

Bassin de la Méditerranée.—A new basin, called Bassin de la Méditerranée, for which extensive dredging is necessary, is under construction, and, when completed, will form an extension to the port north-eastward of Nouveau Bassin.

Ancien Bassin and Canal de Sète.—Ancien Bassin or Vieux Bassin lies westward of Avant Port and has depths of from 16 to 23 feet (4^m9 to 7^m0); its quays are used by coasters and also afford shelter to fishing vessels and pleasure craft. Extending about a quarter of a mile northward from Ancien Bassin is Le Chenal, a channel with a width varying from 121 to 197 feet (36^m9 to 60^m0), and with depths of from 10 to 21 feet (3^m0 to 6^m4). Le Chenal terminates at a swing bridge (Lat. 43° 24' N., Long. 3° 42' E.), northward of which Canal de Sète extends about 8 cables north-north-westward to Étang de Thau. The depths in Canal de Sète are only about 10 feet (3^m0), and it is principally used by canal barges and small craft from Étang de Thau; it is crossed by several swing bridges.

Canal de la Peyrade.—This canal connects Canal Maritime with Canal de Sète and forms an outlet for Canal des Étangs, which runs from Sète to the Rhône.

Canal de la Peyrade has depths of only about 7 feet (2^m1) and is not used by sea-going vessels.

Canal Lateral and Bassin de la Compagnie du Midi.—Canal Lateral connects Canal de Sète and the northern end of Canal Maritime; its extension eastward of Canal Maritime forms Bassin de la Compagnie du Midi. It has a width of 328 feet (100^m0) and depths of from 23 to 25 feet (7^m0 to 7^m6); the northern side of Canal Lateral and both sides of Bassin de la Compagnie du Midi are served by the railway. Vessels of a draught not exceeding 23 feet (7^m0) can berth alongside the quay on the southern side of Bassin de la Compagnie du Midi.

Regulations.—The swing bridges will only be worked between 0600 and 1900. Vessels wishing to pass should sound as many long

Chart 1805, plan of Port of Sète.

blasts on the syren or whistle as there are bridges through which they wish to pass.

Refuse is not permitted to be thrown overboard ; if alongside, carts, and if at anchor, lighters, are provided for this purpose.

Town.—Port facilities.—Life-saving.—Sète is a transit port for trade with Switzerland and the German canals and ranks second only to Marseilles among French Mediterranean ports. The principal imports are crude oil, timber and chemicals and the principal exports, wines and superphosphates.

In 1937, 1,521 vessels of a tonnage of 1,876,000, entered the port.

In 1948, the population was about 37,000.

Large stocks of coal, fuel oil, diesel oil and petrol are maintained.

Fresh water is laid on to the quays and water boats are available.

Small repairs to hull and machinery can be undertaken.

There is a 135-ton floating sheer legs in the port and lighters and tugs are available.

A motor lifeboat is stationed in Ancien Bassin, *see* page 12.

Sète is on the main railway running from the Spanish frontier to the Rhône valley, and on an inland waterway connecting the Rhône and Garonne rivers.

There is regular sea communication with ports in North Africa, Spain and Italy, and regular air communication to all parts from Montpellier, about 14 miles north-eastward of the port.

Deratisation.—Deratisation can be carried out, *see* page 18.

Chart 1804.

Étang de Thau. — General remarks. — Étang de Thau is a large lagoon about 10 miles long and with an average width of about 2 miles. It is connected with the sea by Canal de Sète, with Rivière de l'Hérault and the basin of the Garonne by Canal du Midi, and with Rivière Rhône by Canal des Étang. At its eastern end is a bay named Étang des Eaux Blanches, which is entered from westward between Pointe du Barrou, situated about 2 miles north-north-westward of Cap de Sète, and Pointe de Balaruc, about 6½ cables farther northward. On the north-western shore of the lagoon are the towns of Bouzigues, Mèze and Marseillan, and at its south-western end is the entrance to Canal du Midi. Except in a dredged channel in Étang des Eaux Blanches, described below, Étang de Thau is only accessible to vessels drawing 10 feet (3^m0) and under. Prolonged northerly winds tend to lower the level in the lagoon and winds from seaward tend to raise it.

Étang des Eaux Blanches. — Lights. — Beacons. — Dangers. — A light is exhibited, at an elevation of 16 feet (4^m9), from a tidal signal tower on the western side of the northern end of Canal de Sète (Lat. 43° 25' N., Long. 3° 41' E.) and about the middle of the southern side of Étang des Eaux Blanches.

Nearly the whole of the eastern shore of Étang des Eaux Blanches is lined with quays, behind which are several factories ; a very tall chimney on a factory at Saint Gobain, about 1½ miles north-eastward of Pointe du Barrou, can be distinguished from a great distance.

A channel, marked by buoys and beacons and dredged to a depth of 23 feet (7^m0), leads from the northern entrance to Canal de Sète to the quays on the eastern side of Étang des Eaux Blanches. The channel terminates at a small harbour at the north-eastern corner of Étang des

Chart 1804.

Eaux Blanches, where there is an oil refinery and a blast furnace ; there are depths of 6 feet (1^m8) in this harbour.

A beacon, painted red and surmounted by a cone, marks a rock, awash, close off a quay near to the factory at Saint Gobain. 5

The entrance to Canal des Étangs lies on the eastern side of Étang des Eaux Blanches, about three-quarters of a mile north-eastward of the northern entrance to Canal de Sète. It is entered between jetties which extend about 3½ cables offshore, and it connects Étang de Thau with the Rhône. The canal is available to vessels not exceeding 10 246 feet (75^m0) in length, 25 feet (7^m6) in breadth and 5 feet (1^m5) in draught ; it is about 53 miles long and passes through Aigues-Mortes (page 63).

A beacon, painted black and surmounted by a cylinder, stands about three-quarters of a cable northward of Pointe du Barrou and marks the 15 edge of a shoal bank which fringes the point.

A bank on which the depths are less than 10 feet (3^m0) extends as much as 2 cables southward from Pointe de Balaruc. Rocher de Roquerols lies about one cable southward of the edge of this bank, and passage between this rock and the point should not be attempted. 20

A light is exhibited, at an elevation of 19 feet (5^m8), from a tower painted in red and black horizontal bands and surmounted by a sphere, 17 feet (5^m2) in height, situated on Rocher de Roquerols.

On the eastern side of Pointe de Balaruc, a jetty extends about 200 feet (61^m0) and affords shelter from south-easterly winds ; there 25 is accommodation alongside it for small local craft.

Harbours in Étang de Thau. — Depths. — Lights. — Dangers.

—**Beacons.**—Port de Bouzigues, situated on the north-western shore of Étang de Thau, about three-quarters of a mile north-westward of Pointe de Balaruc, has a small harbour enclosed between two jetties. 30 There are depths of 6½ feet (2^m0) in the entrance and in the middle of the harbour, decreasing to 4½ feet (1^m4) alongside a wooden quay at the head. Two lights are exhibited from the quay at Port de Bouzigues.

Port de Mèze, situated about 2½ miles south-westward of Port de Bouzigues, consists of a basin about 950 feet (289^m6) long which is 35 accessible to vessels drawing 10 feet (3^m0). A rock with a depth of less than 6 feet (1^m8) over it, lies about 3½ cables east-north-eastward of the entrance.

A light is exhibited, at an elevation of 21 feet (6^m4), from a concrete tower, 16 feet (4^m9) in height, situated on the eastern pier-head at 40 Port de Mèze.

A beacon, painted black and surmounted by a cylinder, marks a rock with a depth of 3 feet (0^m8) over it, about half a mile south-westward of the entrance to Port de Mèze.

Port de Marseillan, situated about 5 miles south-westward of Port de 45 Mèze, is sheltered from south-easterly winds by a breakwater. The port and its approaches have been dredged to a depth of 10 feet (3^m0). It is entered between two jetties on the head of each of which a light is exhibited.

Between Port de Mèze and Port de Marseillan, the coast is fronted 50 by mud and rocks extending over half a mile offshore in places. A beacon (*Lat.* 43° 21' N., *Long.* 3° 32' E.), painted red and surmounted by a cone, stands on a rock with a depth of 5 feet (1^m5) over it, situated about 2 miles north-eastward of Port de Marseillan and about half

Chart 1804.

a mile east-south-eastward of Pointe de Montpenède. A similar beacon stands on a rock with a depth of 2 feet (0^m6) over it, situated about a quarter of a mile north-westward of Port de Marseillan.

- 5 The entrance to Canal du Midi, which connects the Mediterranean with the Atlantic, is situated at Les Onglous, about 1½ miles southward of Port de Marseillan at the south-western corner of Étang de Thau ; there is a small dry dock at Les Onglous. The canal is entered between two jetties which extend about one mile north-north-eastward from
- 10 Les Onglous ; there are depths of 5 feet (1^m5) in the entrance channel.

A light is exhibited, at an elevation of 31 feet (9^m4), from a white circular tower with the upper part painted black, 29 feet (8^m8) in height, situated on the head of the eastern jetty.

- Directions.**—Vessels proceeding into Étang de Thau should, on
- 15 clearing Canal de Sète, steer for Pointe de Balaruc and when abreast the black beacon close northward of Pointe du Barrou, they should alter course eastward to pass between that beacon and the light-beacon on Rocher de Roquerols. If proceeding to Port de Marseillan, they should shape course direct for the entrance to that port, with Marseillan
- 20 church tower about 2° on the starboard bow.

*Chart 1805.***GULF OF LIONS** (*continued*).—**Coast.**—**Dangers.**—**Anchorage.**

- Between Port de Sète and Grau de Palavas, about 12½ miles north-eastward, the coast is low and flat and consists of a sandy beach broken
- 25 at intervals by clumps of trees. Close within the coast at Maguelonne, situated about 11 miles north-eastward of Cap de Sète, is the tower of a ruined church and in the background may be distinguished the church towers of Montpellier, Pérols and Mauguio, situated respectively, about 6 miles northward, about 4 miles north-eastward, and about 8 miles
- 30 north-eastward, of Maguelonne.

- A rocky bank on which the depths are less than 5 fathoms (9^m1), extends about 1½ miles offshore between positions on the coast from 3½ to 7 miles north-eastward of Cap de Sète. Banc de Maguelonne, on which the depths are less than 5 fathoms (9^m1), extends about one
- 35 mile offshore southward of Maguelonne, and a rocky bank with similar depths over it, extends about 1½ miles offshore south-eastward of Palavas.

- Vessels may obtain anchorage off the coast south-eastward of Maguelonne, between the rocky banks of Maguelonne and Palavas,
- 40 in depths of from 33 to 39 feet (10^m1 to 11^m9), reddish sand, with the church at Maguelonne in line with the summit of Mont Bauzille, bearing about 294°, *see* sketch facing page 64, and a church spire at Montpellier in line with Pic Saint Loup. The holding ground off Palavas is bad.

- 45 **Grau de Palavas.**—**Lights.**—**Life-saving.**—Grau de Palavas is the outlet of Le Lez, a river which flows into the sea between two jetties, 85 feet (25^m9) apart. The entrance is surrounded by a prominent group of buildings, south-westward of which may be seen the Grand hotel which is a large isolated building, a church with a cupola, and
- 50 a large water-tower. The river is only accessible to small craft drawing less than 2 feet (0^m6), and such craft should hug the north-eastern bank on account of a sandbank on the western side of the channel.

Leading lights have been established for entering Grau de Palavas

Charts 1780, 160, 2158a, 449.

Chart 1805.

(*Lat.* 43° 32' N., *Long.* 3° 56' E.). The rear light is exhibited at an elevation of 23 feet (7^m0) from a mast, 11 feet (3^m4) in height, situated on the eastern jetty; the front light is exhibited at an elevation of 18 feet (5^m5) from a mast, 14 feet (4^m3) in height. These lights in line, bearing 319°, lead from seaward between the jetties in a least depth of 3 feet (0^m9). 5

A light for the use of aircraft is occasionally exhibited at an elevation of 56 feet (17^m1), from a position close to Lattes, about 3 miles north-north-eastward of the entrance to Grau de Palavas. 10

A pulling lifeboat is stationed at Grau de Palavas, *see* page 12.

Golfe d'Aigues-Mortes. — Lights. — Caution. — Golfe d'Aigues-Mortes is entered between Grau de Palavas and Pointe de l'Espiguette, about 9 miles east-south-eastward. Between Grau de Palavas and Grau du Roi, about 9 miles eastward, the shore forming the head of the gulf is low and regular with few landmarks. The most prominent features on this stretch are:—a sheepfold with a long and gently-sloping roof, situated on the coast about 3 miles east-north-eastward of Grau de Palavas; a redoubt, marked by a clump of poplars, situated in the ruins of Grand Travers, about 2 miles farther east-north-eastward; some wine stores with red-tiled roofs, about 2 miles eastward of the redoubt; and a custom house about three-quarters of a mile south-south-eastward of the wine stores. 20

Grau du Roi, about 2½ miles northward of Pointe de l'Espiguette, is the entrance to a canal leading to the town of Aigues-Mortes, about 3 miles north-eastward. The entrance may be identified by numerous buildings, an old lighthouse, a water tower, and the light-structures on the jetties which project on either side. The walls of Aigues-Mortes, flanked by towers and with Tour de Constance showing over them, may also be distinguished but with some difficulty. 30

A chain of sand dunes, named Les Baronnets, about 40 feet (12^m2) high, extends along the coast between Grau du Roi and Pointe de l'Espiguette. This point is stated to be extending westward about 50 feet (15^m2) a year, and should be given a wide berth. In 1950, depths of about 2½ fathoms (5^m0) were reported about one mile offshore abreast Les Baronnets, and vessels should give this stretch of coast a berth of about 1½ miles. 35

A light is exhibited, at an elevation of 79 feet (24^m1), from a grey, square tower, 82 feet (25^m0) in height, situated on Pointe de l'Espiguette, *see* sketch facing page 64. An old signal tower stands close north-westward of the light-structure. 40

A light is exhibited, at an elevation of 33 feet (10^m1), from a black and white tower, 27 feet (8^m2) in height, situated on the head of the north-western jetty at Grau du Roi. In 1949, this light was temporarily extinguished. 45

A light is exhibited, at an elevation of 33 feet (10^m1), from a white tower, lower part green, 27 feet (8^m2) in height, situated on the head of the south-eastern jetty at Grau du Roi (*Lat.* 43° 32' N., *Long.* 4° 08' E.).

Rocky banks and ledges, sometimes covered with sand, extend parallel with the northern shore of the gulf into depths of from 8 to 11 fathoms (14^m6 to 20^m1), and as much as 1½ miles offshore in places; they are only dangerous for anchorage and in the eastern part of the gulf, the bottom is of grey sand. During calms or north-westerly winds, anchorage may be obtained in greater depths outside the rocky 50

Charts 1780, 160, 2158a, 449.

Chart 1805.

banks and ledges, with a bottom of muddy sand or mud, but in general, anchorage in the gulf is not safe.

The depths in Golfe d'Aigues-Mortes are tending to decrease and it is essential to sound frequently as the depths shown on the chart cannot be entirely relied on.

Rade d'Aigues-Mortes. — Anchorage. — Directions. — Vessels approaching Rade d'Aigues-Mortes in the north-eastern part of the gulf may identify a hospital about a quarter of a mile northward of the jetties at Grau du Roi, a cemetery about 2 cables farther northward, and Villa Leenhardt, a large building, about midway between them.

A good anchorage berth may be obtained in depths of from 30 to 33 feet (9^m1 to 10^m0), good holding ground, about 7 cables south-westward of the entrance to Grau du Roi. At night, vessels should anchor with Pointe de l'Espiguette light bearing between 146° and 158°, and the lights on the jetty heads bearing between 020° and 030°. This anchorage is sheltered from eastward and north-eastward and the most dangerous winds are southerly; vessels should weigh when they begin to blow. South-westerly winds do not last long and are not usually dangerous.

Grau du Roi. — Life-saving. — The canal is accessible to small craft of a draught not exceeding 13 feet (4^m0); it leads to Aigues-Mortes but the latter port is no longer kept in repair. The entrance is 66 yards (60^m4) wide between the jetties, but this width is reduced in the canal to 32 yards (29^m3) at the surface and to 20 yards (18^m3) at the bottom. Vessels using the canal must keep in mid-channel. During northerly winds or after rain, the current at the entrance is very strong.

A pulling lifeboat is stationed at Grau du Roi, *see* page 12.

Pointe de l'Espiguette to Les Saintes Maries. — Life-saving. — Between Pointe de l'Espiguette and Les Saintes Maries, a small town on the coast about 12 miles eastward, the coast is low, flat and not easily distinguished. About midway along this stretch, a large wreck lies stranded and the custom house of Quatre Maries, which is not very conspicuous, stands about 2½ miles farther eastward. About one mile westward of Les Saintes Maries, Grau d'Orgon forms a break in the coast-line. In very clear weather, Les Saintes Maries, which is dominated by its large church, is visible from a distance of 7 or 8 miles and appears as an isolated hillock.

A pulling lifeboat is stationed at Les Saintes Maries, *see* page 12.

Golfe des Saintes Maries. — Lights. — Fog signal. — Beacon. — Caution. — Between Les Saintes Maries and Pointe de Beauduc, about 8 miles east-south-eastward, the coast curves and forms Golfe des Saintes Maries, the shores of which are backed by sand dunes from 20 to 23 feet (6^m1 to 7^m0) in height.

A light is exhibited, at an elevation of 57 feet (17^m4) from a white square tower, with a black upper part, 51 feet (15^m5) in height, situated at La Gacholle (*Lat.* 43° 27' N., *Long.* 4° 34' E.), about half a mile within the head of Golfe des Saintes Maries and about 7 miles eastward of Les Saintes Maries.

A light is exhibited, at an elevation of 84 feet (25^m6), from a white tower with a black lantern, 82 feet (25^m0) in height, situated about one mile east-south-eastward of the western extremity of Pointe de Beauduc. A fog signal is sounded from the light-structure.

Charts 1780, 160, 2158a, 449.

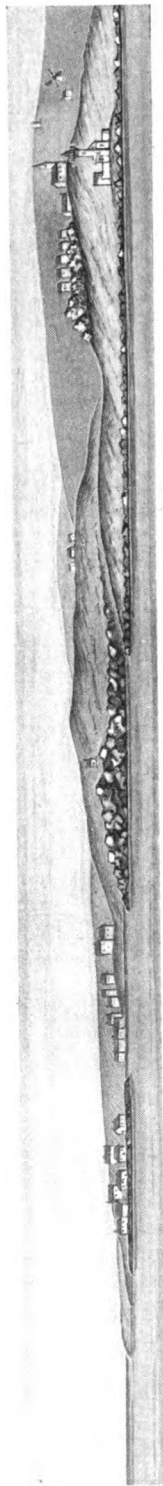


*Miguelonne church & the summit of Mont
Bauzille, bearing 294°.
(Original dated 1876.)*



*Pointe de l'Espiguette light-structure
from south-westward.
(Top now painted black.)
(Original dated 1876.)*

To face page 05.



Port de Carro.

Cap Couronne from half a mile southward.
(Original dated 1876.)

*Church.
Cap Couronne light-structure.*

Chart 1805.

A black pyramidal framework beacon, surmounted by a circular disc, stands close within the western extremity of Pointe de Beauduc. This beacon and the light-structures at Pointe de Beauduc and La Gacholle, are the principal features on the shores of the gulf. 5

Pointe de Beauduc is stated to be extending north-westward at about 50 feet (15^m2) a year and should be given a wide berth. The point, and the area for about one mile westward of it, are covered by a *green* sector of La Gacholle light, bearing less than 014°.

Anchorage.—Directions.—Anchorage may be obtained in the 10 eastern part of Golfe des Saintes Maries, with good holding ground and shelter from easterly winds. Vessels should approach the anchorage keeping La Gacholle light-structure bearing between 014° and 070°, giving Pointe de Beauduc a berth of at least one mile. When the black beacon on the latter point bears about 128°, vessels should alter course 15 eastward and should anchor, in depths of from 5½ to 6½ fathoms (10^m1 to 11^m9), muddy sand, about 1½ miles northward of the beacon. Small vessels will find better shelter farther eastward, in depths of from 23 to 26 feet (7^m0 to 7^m9).

At night, vessels should keep in the *white* sector of La Gacholle light, 20 between the bearings of 014° and 070°, and when Pointe de Beauduc light bears about 128° they should alter course eastward and should anchor with La Gacholle light bearing 014°, on the junction of the *white* and *green* sectors, in depths of from 5½ to 6½ fathoms (10^m1 to 11^m9). 25
Charts 3414 and 1805.

Pointe de Beauduc to Golfe de Fos.—Light.—Current.—At Pointe de Beauduc, the sand dunes which back the shores of Golfe des Saintes Maries decrease in elevation and join the low beach of Faraman which forms the coast for about 10 miles eastward, whence the coast is backed by a thin screen of trees which continues for about 5 miles 30 farther eastward to the mouth of the Rhône at the western entrance point of Golfe de Fos.

A light is exhibited, at an elevation of 136 feet (41^m6), from a black tower with white horizontal bands, 121 feet (36^m9) in height, situated at Faraman, about 4½ miles eastward of Pointe de Beauduc light- 35 structure. Care must be taken not to confuse this light with that on Île de Planier, *see* page 80. The dismantled building of Faraman signal station, the re-establishment of which is proposed, is situated about one mile eastward of Faraman light-structure.

On this stretch of coast, the following landmarks may be identified 40 by the mariner. Faraman light-structure and, about 1½ miles westward of it, a group of buildings amongst which one with a white gable was very prominent in 1948; Piémanson custom house, situated close westward of the western end of the screen of trees fringing the eastern part of the stretch; the large, square Tour de Saint Louis (*Lat.* 43° 23' N., *Long.* 4° 48' E.), situated about 5½ miles east-north-eastward of Faraman light-structure; several large oil tanks and the town of Saint Louis-du-Rhône close eastward of Tour de Saint Louis, and a large and prominent flour mill close eastward of the town.

The current usually sets westward, parallel with this stretch of 50 coast. After strong south-easterly winds, it sometimes attains a rate of over 3 knots off the Faraman beach.

Dangers.—Light-buoys.—The bar at the mouth of the Rhône, formed by the deposit brought down by the river, and with depths of

Charts 3414 and 1805.

3 feet (0^m9) over it, is extending seaward at a rate of about 55 yards (50^m3) a year. Southward of Faraman beach, depths of 5½ fathoms (10^m1) extend over one mile offshore.

- 5 A submerged wreck, the exact position of which is doubtful, is charted about 2½ miles south-south-eastward of Pointe de Beauduc light-structure and another submerged wreck lies about 2 miles south-south-eastward of Faraman light-structure.

Light-buoys are moored off this stretch of coast in depths of not 10 less than 8 fathoms (14^m6); vessels should pass southward of these buoys.

- Faraman No. 1, a can light-and-whistle-buoy, painted red with a broad white horizontal band, surmounted by two red cones, points down, and exhibiting a *red group flashing* light, showing *four* flashes 15 *every fifteen seconds*, is moored about 2½ miles southward of Faraman light-structure.

- Piémanson No. 3, a can light-buoy, painted red with a broad white horizontal band, surmounted by two red cones, points down, and exhibiting a *red group occulting* light, showing *two* eclipses *every nine* 20 *seconds*, is moored about 4 miles east-south-eastward of Faraman light-structure.

- Roustan No. 5, a can light-buoy, painted red with a broad white horizontal band, surmounted by two red cones, points down, exhibiting a *red group flashing* light showing *two* flashes *every nine seconds*, and 25 fitted with a radar reflector, is moored about 7½ miles east-south-eastward of Faraman light-structure.

Chart 3414.

- GOLFE DE FOS. — Light. — Signal station. — General remarks.**—Golfe de Fos is entered between the mouth of the Rhône 30 and Cap Couronne, about 6½ miles east-south-eastward; it is mostly open southward and both south-westerly and south-easterly winds, if strong, send a heavy sea into the gulf. Its western part, however, affords moderate shelter from westerly and south-westerly winds. On its western side, Canal de Saint Louis connects the Rhône with the 35 gulf and on its eastern side, Canal de Martigues connects Étang de Berre with Port de Bouc and thence with the gulf.

- A light is exhibited, at an elevation of 52 feet (15^m8), from a red square tower with a white dwelling, 38 feet (11^m6) in height, situated on Cap Couronne. A signal station stands on a hill about half a mile 40 northward of the light-structure.

- The eastern shores of the gulf are dominated by Collines de Martigues, which, when viewed from seaward, appear to descend from Chânes des Alpines, about 20 miles northward, and on the summit of a hill overlooking Canal de Martigues, about 5½ miles northward of Cap Couronne 45 (*Lat. 43° 20' N., Long. 5° 03' E.*) is the chapel of Notre Dame de la Miséricorde, which is prominent.

- The following landmarks may be identified by vessels entering the gulf. On the western side, a light-structure on the head of a jetty at the entrance to Canal de Saint Louis, about 2½ miles northward of the 50 western entrance point of Golfe de Fos.

On the eastern side of the gulf :—The light-structure on Cap Couronne with, on a hill behind it, the village of La Couronne, a church with a spire, a mill in ruins and a signal station, *see* view facing page 65 ;

Charts 1805, 1780, 160, 2158a, 449.

Chart 3414.

the houses of Port de Carro, about half a mile west-north-westward of Cap Couronne ; a large white square tower on Fort de Bouc, about $4\frac{1}{2}$ miles north-westward of Cap Couronne ; the spire of a church at Saint Pierre, situated about $1\frac{1}{2}$ miles inland, midway between Port de Carro and Port de Bouc ; several buildings in Port de Bouc, the most prominent being a high brick chimney and a water tower, situated close together about three-quarters of a mile north-westward of Fort de Bouc ; the chimney of Verminck factory, situated on the northern side of Canal de Martigues about $2\frac{1}{4}$ miles eastward of the water tower ; two pylons, each 312 feet (98^m1) in height, supporting an overhead cable which crosses Canal de Martigues, which stand, one on each bank, about $2\frac{3}{4}$ miles eastward of Fort de Bouc. The northern pylon is painted in white and black bands and the southern, in white and red bands. At night, the northern pylon is illuminated by a row of red lights and the southern, by a row of alternate red and white lights.

At the head of the gulf, about 3 miles north-westward of Fort de Bouc, the village and church tower of Fos may be distinguished on an isolated hillock, and about one mile farther westward, La Marronède cement factory forms an excellent landmark, its two chimneys by day and the lights by night being prominent.

Current.—In the approach to Golfe de Fos, the currents are generally weak and are much influenced by the wind. Off the mouth of the Rhône, the river current runs out strongly and divides into several branches under the influence of the sea and onshore winds. With south-easterly or north-easterly winds, a branch flows parallel with the shores of the gulf ; another branch flows along the coast off the Faraman beach, creating a surface current. With northerly or north-westerly winds, the current runs more strongly, setting eastward toward Cap Couronne where a whitish patch is formed.

Dangers.—**Light-buoys.**—The banks formed around the mouth of the Rhône, which, as stated above, are advancing seaward about 55 yards (50^m3) a year, are the more dangerous because the coast in this neighbourhood is low and difficult to distinguish and, southward and south-eastward of Canal de Saint Louis, is liable to change.

Balancelle No. 7, a conical light-buoy, the upper part painted red and the lower part white, surmounted by two red cones, bases together, exhibiting a red occulting light giving an eclipse of one-and-a-half seconds duration every six seconds, and fitted with a radar reflector, is moored about $3\frac{1}{2}$ miles south-eastward of the light-structure at the entrance to Canal de Saint Louis.

Saint Louis No. 9, a conical light-buoy, the upper part painted red and the lower part white, surmounted by two red cones, bases together, and exhibiting a red occulting light, giving an eclipse of half a second duration every one-and-a-half seconds, and fitted with a radar reflector, is moored about $2\frac{1}{2}$ miles east-south-eastward of the light-structure at the entrance to Canal de Saint Louis (*Lat.* $43^{\circ} 23' N.$, *Long.* $4^{\circ} 52' E.$). These two light-buoys, together with Faraman No. 1, Piemanson No. 3, and Roustan No. 5, see page 66, are moored approximately on the southern and eastern edge of the 50-foot (15^m2) contour line around the mouth of the Rhône.

A group of five radar reflector beacons is situated about 2 miles south-eastward of the light-structure at the entrance to Canal de Saint

Charts 1805, 1780, 160, 2158a, 449.

Chart 3414.

Louis. The group is in the form of a square with sides about one cable long, with a beacon in the middle and one at each corner.

The south-eastern shore of Golfe de Fos is fringed with rocky ledges, 5 of which Ragues de Carro and Ragues d'Arnette, between half a mile and $1\frac{1}{2}$ miles westward of Cap Couronne, extend about half a mile offshore and are the most important.

A conical light-and-whistle-buoy, the upper part painted black and the lower part white, surmounted by two black cones, points together, 10 and exhibiting a *white group flashing* light, showing *four flashes every fifteen seconds*, is moored on the south-western edge of Ragues de Carro, about one mile westward of Cap Couronne light-structure.

A conical light-buoy, the upper part painted black and the lower part white, and exhibiting a *white group flashing* light, showing *two* 15 *flashes every nine seconds*, is moored close south-westward of Ragues d'Arnette, about $13\frac{1}{2}$ cables west-north-westward of Cap Couronne light-structure (*Lat. $43^{\circ} 20' N.$, Long. $5^{\circ} 03' E.$*).

A light-structure on the northern entrance point of Port de Bouc bearing about 343° , and open westward of the white square tower on 20 Fort de Bouc, leads westward of Ragues de Carro and Ragues d'Arnette.

A shoal, with a depth over it of $7\frac{1}{2}$ feet (2^m3), lies about 2 cables west-north-westward of Cap d'Aiguade, situated on the northern side of the entrance to Port de Bouc, about three-quarters of a mile north-westward of Fort de Bouc; a spoil ground, with a least depth over it 25 of 23 feet (7^m0) in 1948, lies between 2 and 4 cables farther north-westward.

At the head of the gulf, the bottom is strewn with rocks and weed, extending about half a mile offshore.

Torpedo range.—Buoys.—A torpedo range, marked by four pairs 30 of small can mooring buoys, extends about one mile northward from a position about three-quarters of a mile west-north-westward of Pointe de Bonnieu, situated about 2 miles north-westward of Cap Couronne.

Anchorage.—Directions.—Anchorage may be obtained anywhere 35 in Golfe de Fos more than half a mile offshore, except on Plateau du Grande Forté, an area in the middle of the gulf between the entrances to Canal de Saint Louis and Port de Bouc, where the bottom is rock covered with mud; elsewhere in the gulf, the holding ground is generally good.

Anse du Repos, the roadstead north-eastward of the entrance to 40 Canal de Saint Louis, is the best anchorage in Golfe de Fos. Vessels should anchor in depths of about 5 fathoms (9^m1), about 7 cables 070° from the light-structure at the entrance to Canal de Saint Louis. Small vessels should anchor close inshore northward of the entrance. 45 Care is necessary to avoid several wrecks, both above-water and submerged, eastward and north-eastward of the canal entrance.

There is good anchorage in Aigue-Douce, an anchorage off the coast between Cap d'Aiguade and Pointe Beau Massais, about three-quarters of a mile northward, in depths of from 26 to 30 feet (7^m9 to 9^m1), 50 eastward of the spoil ground and about 2 cables offshore. This anchorage is sheltered from northerly and easterly winds, but westerly and southerly winds, if strong, send in a considerable sea.

Anchorage may also be obtained off the entrance to Port de Bouc, in depths of about 9 fathoms (16^m5), mud and good holding ground,

Charts 1805, 1780, 160, 2158a, 449.

Chart 3414.

about half a mile west-south-westward of Fort de Bouc, with Notre Dame de la Miséricorde (*Lat.* 43° 25' N., *Long.* 5° 03' E.) just open northward of the tower on Fort de Bouc. At night, vessels should anchor on the northern limit of the *red* sector of the light on Fort de Bouc, bearing 087°, distant one mile. This anchorage is suitable during moderate winds from all directions except south-eastward, but with fresh winds, the anchorage in Anse du Repos is preferable.

Vessels approaching Golfe de Fos should keep at least 1½ miles offshore south-eastward of the mouth of the Rhône, and if coming from westward, should not alter course northward into the gulf until Fos village bears 000°.

At night, vessels from westward should make Faraman light without, however, approaching within depths of 25 fathoms (45^m7). Vessels approaching from eastward should make the light on Île de Planier, see page 80. The light at Cap Couronne should be easily identified and as soon as the lights on either side of the entrance to Port de Bouc are sighted, vessels should steer for the southern light, keeping in its *white* sector between the bearings of 048° and 342°.

In thick weather, vessels will find depths of about 55 fathoms (100^m6), soft and sticky grey mud, about 6 miles southward of the entrance to the gulf, and there are depths of about 33 fathoms (60^m4) about one mile off the mouth of the Rhône, and off Cap Couronne. If it is impossible to distinguish the coast at this distance, vessels should proceed eastward until it is possible to fix their position.

Port de Carro.—Light.—Life-saving.—Port de Carro is situated about half a mile north-westward of Cap Couronne and is entered between Pointe de Carro and Pointe de Roquetaillade, about a quarter of a mile east-north-eastward. It is accessible to small craft with local knowledge, drawing not more than 10 feet (3^m0), and was formerly sheltered by a small jetty which was damaged in 1944.

A light is exhibited, at an elevation of 30 feet (9^m1), from a white masonry tower, situated on the head of the jetty.

Vessels entering the harbour should pass about 50 feet (15^m2) off the head of the jetty and should then steer for the lifeboat house at the head of the harbour.

A motor lifeboat is stationed at Port de Carro.

Canal de Saint Louis.—Entrances.—Light.—On account of its bar, the mouth of the Rhône is impracticable for vessels and the river is entered from Golfe de Fos through Canal de Saint Louis. The entrance to the canal lies on the western side of the gulf about 2½ miles northward of its western entrance point, and it extends about 3 miles westward to Bassin de Saint Louis, which lies at the junction of the canal and river and, together with the western end of the canal, constitutes the port of Saint Louis du Rhône. The canal is 207 feet wide at the surface and 80 feet wide on the bottom. The basin is connected to the Rhône by a lock at its south-western corner; the lock is used only by river craft and has depths of 13 feet (4^m0) in it. In 1949, the canal and basin were dredged to depths of 24½ feet (7^m5).

The southern side of the canal entrance is prolonged by a jetty which extends about one mile eastward. The channel abreast the jetty is 200 feet (61^m0) wide for a length of about 4 cables, then one cable wide for about 4 cables, and thence, for about 4½ cables eastward, the width is 2½ cables. A light is exhibited, at an elevation of

Chart 3414.

31 feet (9^m4), from a black metal tower, situated on the head of the jetty.

The northern side of the entrance channel is marked by three black spherical buoys, the outermost of which is surmounted by a black cone.

Northerly or north-westerly winds sometimes lower the level of the canal by as much as 2 feet (0^m6) ; south-easterly winds tend to raise the level.

Pilotage. — Movements signals. — Pilotage is compulsory from the sea to Port Saint Louis (*Lat. 43° 23' N., Long. 4° 49' E.*). The pilot station is situated about 1½ miles south-south-westward of Canal Saint Louis light-structure, and may be identified by its flagstaff. Vessels awaiting a pilot should anchor in Anse de Repos, about one mile north-eastward of the light-structure at the canal entrance, taking care to avoid the wrecks.

Vessels normally requiring a pilot hoist the pilot jack with any other flag under it, at the foremast head ; the second flag is the special signal for a canal pilot, flag G. hoisted singly being the signal for a Port de Bouc pilot.

The movements of vessels in the canal are normally controlled by signals shown at either end, *see* simplified code of signals, page 10. Both the signals for pilots and those for movements in the canal were suspended during hostilities, and in 1949 neither had been brought into use again.

Port Saint Louis du Rhône.—Quayage.—Depths.—Bassin Saint Louis is about 2½ cables long and 1½ cables wide and is dredged to a depth of 24 feet (7^m3). In addition to the quays which form the sides of the basin, there are three berths on the northern side of the canal close eastward of the basin ; one of these berths is used for embarking and discharging fuel oil and is connected by pipe-line with the oil tanks. The quays were all damaged during hostilities, but in 1949 two of the berths in the canal, with depths alongside of 23 feet (7^m0), were available to shipping, and in Bassin Saint Louis five berths, with depths alongside of 20 feet (6^m1), were available at Quai Ouest and at the forward part of Quai Nord.

Directions.—Vessels approaching the entrance to Canal de Saint Louis, should keep the light-structure on the head of the jetty bearing less than 284° and should take care to avoid the wrecks situated eastward and north-eastward of the entrance.

At night, vessels should keep in the white sector of the light on Fort de Bouc, between the bearings of 040° and 342°, until the light on the jetty at the entrance to Canal de Saint Louis is sighted bearing less than 284°, whence they should proceed as previously directed.

Vessels entering the canal should keep Tour de Saint Louis, situated at the western end of the canal, bearing 265°, and they should keep about 22 yards (20^m1) from the jetty. When in the canal, vessels should keep in mid-channel and should proceed at a moderate speed.

Saint Louis du Rhône.—Port facilities.—Life-saving.—In 1948, the town of Saint Louis du Rhône had a population of about 4,000. Moderate supplies of fresh provisions may be obtained and fresh water is available at the quays.

About 300 tons of coal and large amounts of fuel oil are normally stocked. Coal is embarked by cranes and fuel oil by pipe-line at one of the canal quays.

Charts 3414, 1805, 1780, 160, 2158a, 449.

Chart 3414.

There are cranes up to 3 tons capacity and two small tugs.

The port is served by the railway and there is regular sea communication with North African and other Mediterranean ports and a heavy traffic of river craft between the port and Lyon.

A motor lifeboat is stationed at Port de Saint Louis.

Chart 3414, plan of Port de Bouc.**Port de Bouc. — General remarks. — Buoyage. — Lights. —**

Port de Bouc, entered on the eastern side of Golfe de Fos, is situated at the western end of Canal de Martigues, which connects Étang de Berre with the sea. The entrance to the harbour lies between a mole which extends southward and eastward from Pointe de la Lègue (*Lat.* $43^{\circ} 24' N.$, *Long.* $4^{\circ} 59' E.$), situated about half a mile south-eastward of Cap d'Aiguade, and the large square tower on Fort de Bouc, about $1\frac{1}{4}$ cables southward. The entrance is dredged to a depth of 33 feet (10^m1) ; within the entrance, the western part of the harbour is dredged to a depth of 26 feet (7^m9) and the central part to a depth of 30 feet (9^m1) ; in 1950, work was in progress dredging the eastern part of the harbour to a depth of 39 feet (11^m9).

South-westerly winds raise the heaviest seas at the entrance to Port de Bouc and cause an in-going current which increases the difficulties of entrance. With a high sea, access to the harbour from Golfe de Fos is impossible. Heavy rain or prolonged north-easterly winds may cause an out-going current which sometimes attains a rate of 4 knots and makes manœuvring difficult in the harbour.

Within the harbour, the south-eastern limit of the dredged area is marked by a white can buoy, moored about $1\frac{1}{2}$ cables north-north-eastward of the tower on Fort de Bouc, and by two light-buoys, named Agglomérés No. 4 and Aubran No. 6 ; the former is painted red and is moored about 4 cables north-north-eastward of the tower on Fort de Bouc and exhibits a *green fixed* light ; the latter is painted black, surmounted by a black cone and moored about 6 cables north-north-eastward of the same tower and exhibits a *green flashing* light showing a flash of *one-and-a-half seconds* duration *every six seconds*.

The western entrance to Canal de Martigues (page 73) is situated at the north-eastern corner of the harbour, close northward of Aubran No. 6 light-buoy, and the entrance to Canal d'Arles, in which there are depths of $6\frac{1}{2}$ feet (2^m0), is situated near the north-western corner of the harbour.

A light is exhibited, at an elevation of 39 feet (11^m9), from a concrete post, 33 feet (10^m1) in height, situated on the head of the mole forming the northern entrance point of Port de Bouc.

A light is exhibited, at an elevation of 98 feet (29^m9), from a white circular turret on the large square tower, 84 feet (25^m6) in height, situated in Fort de Bouc.

A light for the use of aircraft is occasionally exhibited, at an elevation of 98 feet (29^m9), from Istres, situated about $7\frac{1}{2}$ miles northward of Fort de Bouc.

Dangers. — Light-buoy. — Leading light-beacons. — Rocheaux des Tasques extend about $1\frac{1}{4}$ cables west-south-westward from the head of the mole forming the northern entrance point, with depths of 2 fathoms (3^m7) over them.

A light-buoy, painted red, surmounted by a red cylinder, and exhibiting a *red flashing* light, *every six seconds*, is moored southward of

Charts 3414, 1805, 1780, 160, 2158a, 449.

Chart 3414, plan of Port de Bouc.

Rocheaux des Tasques, about 2 cables west-south-westward of the tower on Fort de Bouc.

Leading light-beacons have been established for entering the harbour.

- 5 The front beacon stands on a mole on the southern side of Bassin Aubran; the rear beacon stands about $2\frac{1}{2}$ cables north-north-eastward of the front beacon. These beacons, or at night, their lights, in line bearing 034° , lead through the entrance passing close south-eastward of the red light-buoy.

- 10 **Quayage. — Light. — Bassin de Lavera.**—Quai de la Lèque, on the western side of the harbour, has a length of 689 feet (210^m0) and depths of 26 feet (7^m9) alongside.

On the northern side of the harbour, at the entrance to Canal d'Arles, is Bassin d'Entrée, about 1,000 feet (304^m8) long, 200 feet (61^m0) wide and with depths of 10 feet (3^m0). Eastward of Bassin d'Entrée is

- 15 Bassin Aubran, with general depths of from 5 to 16 feet (1^m5 to 4^m9) and suitable for vessels under 500 tons.
A light (*Lat.* $43^{\circ} 24' N.$, *Long.* $4^{\circ} 59' E.$) is exhibited, at an elevation of 23 feet (7^m0), from the western side of the entrance to Bassin Aubran.
20 A channel, dredged to 29 feet (8^m8), leads from the centre of the harbour to Bassin Pétrolier de Lavera in the south-eastern corner of the harbour, about $3\frac{1}{2}$ cables east-north-eastward of Fort de Bouc. The channel is 65 yards (59^m4) wide at the surface, and 42 yards (38^m4) wide at the bottom, and its axis is indicated by the alignment
25 of three beacons on the southern side of the harbour; the entrance to the channel is marked by two buoys. There are two tanker berths in the basin, one of which will accommodate vessels of a draught not exceeding 27 feet (8^m2), and the other, smaller craft up to 20 feet (6^m1) draught; pipe-lines are laid on to the berths. Manœuvring is difficult
30 with the wind or current across the dredged channel and large vessels are towed to the berth, stern first.

Works in progress.—Work is in progress on the construction of a new basin for tankers between Fort de Bouc and Bassin de Lavera. The new basin will contain berths for eight large tankers, and the
35 berths and their approaches, including the entrance to Port de Bouc, will be dredged to a depth of 36 feet (11^m0). The completion date is 1952 and in the meantime a sea pipe-line and mooring berth is under construction and was nearing completion in 1949. At night, the area where construction work is in progress is marked by lights.

- 40 **Pilotage.**—Pilotage is essential for entering Port de Bouc on account of work in progress in the harbour. The pilot station is on Pointe de la Lèque at the root of the mole on the northern side of the harbour entrance. Vessels may summon a pilot by sounding three long, followed by one short, blasts on the siren.

- 45 **Directions.**—Vessels should approach the entrance with the leading light-beacons in line, bearing 034° , which leads through the middle of the entrance, passing close south-eastward of the red light-buoy. With a fresh breeze, vessels should proceed at a speed sufficient to keep the vessel under control in the sea running at the entrance.

- 50 **Town.—Port facilities.—Deratisation.**—Port de Bouc is a port of growing importance and, when the present construction works are completed, will be one of the principal French petroleum reception ports. In 1948, the population was about 6,000.

Fresh water is available alongside the quays. Quai de la Lèque and

Charts 3414, 1805, 1780, 160, 2158a, 449.

Chart 3414, plan of Port de Bouc.

the quays on the northern side of Bassin Aubran are served by the railway.

Including the quays in Canal de Martigues (*see below*), there are cranes up to 20 tons capacity and there is a 60-ton floating sheer-legs. 5

Tugs are available, including two for the turning of tankers using Bassin de Lavera.

There is regular sea communication with other Mediterranean ports and Port de Bouc is connected by canal with the Rhône and with Marseille. 10

Deratisation can be carried out, *see page 18.*

Charts 3414, plan of Port de Bouc, 3414.

Canal de Bouc à Martigues.—Leading lights.—Buoys.—This canal connects Port de Bouc with Martigues, situated at the south-western corner of Étang de Berre, about 3 miles eastward. It is dredged to a depth of 29½ feet (9^m0) from the western entrance to within about half a mile of Martigues, whence the remainder is dredged to 33 feet (10^m1); its width on the bottom is about 55 yards (50^m3) and the maximum draught of vessels using the canal is 26 feet (7^m9). A railway bridge, Viaduc de Caronte (*Lat. 43° 24' N., Long. 5° 02' E.*), 20 crosses the canal about midway between Port de Bouc and Martigues, and close westward of the latter the canal is spanned by a high-tension cable with a headway of 213 feet (64^m9). Viaduc de Caronte has a headway of 79 feet (24^m1), but it should not be passed by vessels with a masthead height of more than 69 feet (21^m0). The northern section 25 of the viaduct, which was formerly a swing bridge, has been partly destroyed and in 1950 was being replaced by a horizontally-lifting bridge, which, when open, will give a clear passage-way 130 feet (39^m6) wide.

Leading lights have been established for the western part of the 30 canal. The front light is exhibited, at an elevation of 69 feet (21^m0), from the south-western extremity of Bassin d'Entrée; the rear light is exhibited, at an elevation of 108 feet (32^m9), from a position about 2½ cables westward of the front light. These lights in line, bearing 273°, indicate the axis of the western part of the canal. These lights 35 were destroyed in 1945 and in 1949 had not been re-established.

At about 4 cables eastward of Viaduc de Caronte, the canal curves east-north-eastward and at this point, for about half a mile farther eastward, the southern side of the dredged channel is marked by 5 black buoys, each surmounted by a black cone. 40

Quayage.—Turning basin.—The northern bank of the canal is lined by quays, of which the principal ones are Quai Kuhlman, situated close eastward of Bassin Aubran, with depths of 26 feet (7^m9) alongside; and Quais de Caronte and Verminck, with depths of 29½ feet (9^m0) alongside both of them and situated, respectively, close westward 45 and close eastward of Viaduc de Caronte.

A turning basin, with depths of 29½ feet (9^m0) in it, has been dredged in the canal, close westward of Viaduc de Caronte. It is in the shape of a trapezium; the northern side is 520 yards (476^m5) long and the southern side, 415 yards (379^m5); its width is 125 yards (114^m3). 50 The limits of this basin are marked by mooring buoys.

Currents.—In the canal, the currents are mostly tidal, but after strong winds, they are very variable and there may even be a slight set against the tidal stream.

Charts 1805, 1780, 160, 2158a, 449.

Chart 3414.

Martigues.—**Swing bridge.**—The port of Martigues is connected with Étang de Berre by a channel dredged to 29½ feet (9^m0), which is available for vessels drawing up to 26 feet (7^m9). The town of

5 Martigues is a tourist centre and has few port facilities for vessels. A swing bridge spans the canal abreast the town. This bridge will be opened during working hours and at other times by request, prior notice being given. Vessels should stop before arriving at the bridge and should sound alternate long and short blasts on the syren.
10 A black ball will be displayed while the bridge is being opened and will be hauled down when the operation is completed. Vessels leaving Étang de Berre have priority of passage.

Close eastward of the swing bridge, Canal de Marseille au Rhône diverges southward from the dredged channel into Étang de Berre,
15 and follows the southern shore of the lagoon, being dredged to a depth of 10 feet (3^m0). For continuation of this canal, *see* page 85.

Entrance channel to Étang de Berre.—**Buoyage.**—**Current.**—The dredged channel into Étang de Berre extends about one mile east-north-eastward from the swing bridge. It is marked by four pairs of
20 buoys, those on the northern side being painted red and surmounted by a red cylinder, and those on the southern side being painted black and surmounted by a black cone. The northern buoy of the second pair is a light-buoy exhibiting a *red fixed* light, and both buoys of the fourth pair are light-buoys, the northern exhibiting a *red flashing* light, show-
25 ing a flash of *one-and-a-half seconds* duration *every six seconds*, and the southern buoy exhibiting a *green fixed* light.

Four mooring buoys lie, two on either side of the channel where it enters Étang de Berre.

The current running in and out of Étang de Berre at times attains a
30 rate of 3 knots.

Étang de Berre.—**Light.**—In 1937, there were depths of from 4 to 5½ fathoms (7^m3 to 10^m0) all over the central part of Étang de Berre, but the deposit brought down by the various streams flowing into it decreases the depths by about 3 feet (0^m9) in approximately
35 60 years. Vessels navigating in depths of less than 4½ fathoms (7^m8) run the risk of fouling their propellers with weed.

The western side of the lagoon is hilly and the eastern side flat. The towns of Istres and Saint Chamas lie, respectively, on the western side about 7½ miles north-north-westward of Martigues, and in Baie de
40 Saint Chamas, about 3 miles farther north-north-eastward and at the northern end of the lagoon. An arm, named Étang de Vaine, extends about 3½ miles north-eastward from the south-eastern corner of Étang de Berre, with the town of Berre (*Lat. 43° 28' N., Long. 5° 10' E.*) about midway along its north-western shore.

45 The water level in the lagoon rises from 8 to 16 inches (0^m2 to 0^m4) above the mean level during October, November and December, and falls about the same amount below it in February.

The shores of Étang de Berre are free from dangers except off the eastern entrance point of Baie de Saint Chamas, where the deposit
50 from a river forms a dangerous bank, and also off Pointe de la Mède, situated at about the middle of the southern shore, where some rocks named Les Frères lie about 2 cables offshore. A light is exhibited from a structure situated on one of these rocks.

Local winds.—**Currents and tidal streams.**—The winds over

Charts 1805, 1780, 160, 2158a, 449.

Chart 3414.

Étang de Berre are peculiar to this locality. In summer, the prevailing winds are southerly or south-westerly, the latter being accompanied by rain. In winter, north-westerly gales on the neighbouring coasts turn to northerly or north-north-easterly over the lagoon and blow very hard, raising a short, steep sea. In spring, westerly or north-westerly winds, accompanied by squalls, prevail over the lagoon.

A southerly wind causes a current setting eastward along the coast and a northerly wind causes a current setting westward along the coast. These currents are especially noticeable at the entrance to Canal de Martigues; if the wind commences to blow at some distance offshore, the current frequently starts to flow before the wind arrives, thus giving an indication of its approach.

The in-going tidal stream sets eastward along Canal de Martigues and northward along the western shore of Étang de Berre; the outgoing stream sets southward along the western shore and westward in Canal de Martigues. These tidal streams are only apparent in the immediate vicinity of the canal.

Anchorage.—Prohibited anchorage.—Anchorage may be obtained anywhere in Étang de Berre, over a bottom of mud and weed, good holding ground for heavy anchors which will not slide over the thick weed which covers the bottom.

In Anse du Ranquet, a bay on the western shore about $4\frac{1}{2}$ miles north-north-westward of Martigues, there is a landing place and a small harbour, sheltered from southward, which is suitable for barges or lighters.

There is good anchorage in Baie de Saint Chamas. Port de Saint Chamas, a small harbour on the eastern side of the bay, is accessible to boats drawing less than 5 feet (1^m5) by a channel, the entrance to which is marked by two white buoys.

There is good anchorage off the southern shore, east-south-eastward of Pointe de la Mède (*Lat.* 43° 24' N., *Long.* 5° 07' E.), and also off the northern shore, westward of a landing place at Canet, situated about 2 miles eastward of the eastern entrance point of Baie de Saint Chamas.

Anchorage is prohibited in the vicinity of the mooring buoys situated north-westward of Pointe de la Mède and also between these buoys and the southern shore of Étang de Berre, where there is a berth for tankers discharging oil by sea pipe-line.

Étang de Vaine. — Beacons. — Light-buoy. — Light. — Étang de Vaine is entered between Pointe de Berre, situated on the eastern side of Étang de Berre about 5 miles north-eastward of the entrance to Canal de Martigues, and the southern shore of Étang de Berre, about 2 miles south-eastward. It has general depths of from 16 to 20 feet (4^m9 to 6^m1) in the middle, but it is separated from Étang de Berre by a shallow bar through which there is a channel with depths in it of 7 $\frac{1}{2}$ feet (2^m3); the channel is marked by two beacons and by a light-buoy, painted red, surmounted by a red cylinder and exhibiting a red occulting light, having an eclipse of one-and-a-half seconds duration every six seconds.

Port de Berre contains a seaplane base and is an important aviation centre. It has a small harbour sheltered by a mole and entered from eastward by a small dredged channel, the entrance to which is marked by two white buoys; it is accessible only to small craft drawing less than 8 $\frac{1}{2}$ feet (2^m6).

Charts 1805, 1780, 160, 2158a, 449.

E

Chart 3414.

A light for the use of aircraft is occasionally exhibited, at an elevation of 771 feet (235^m0), from Vitrolles, situated close within the eastern shore of Étang de Vaine, about 3 miles eastward of Port de Berre.

Tanker harbour.—Light.—A harbour where tankers may discharge, accessible to vessels drawing up to 26 feet (7^m9), has been constructed on the eastern side of Étang de Berre, close north-westward of Pointe de Berre (*Lat.* 43° 27' N., *Long.* 5° 10' E.). It is sheltered from north-westward by a mole which projects 558 feet (170^m1) south-westward, from the head of which a light is exhibited, at an elevation of 25 feet (7^m6), from a post, 13 feet (4^m0) in height.

There are two berths for tankers in the harbour, one, secured alongside a pontoon at the mole, bows south-west, and the other, moored with bows north-westward, sending hawsers ahead and astern to bollards and mooring buoys. Vessels may not approach within 20 feet (6^m1) of the side of the mole in order to avoid damage to the pipe-lines. Large vessels require two tugs for berthing in this harbour.

Charts 1805, 1780, 160, 2158a, 449.

CHAPTER III

SOUTHERN COAST OF FRANCE—CAP COURONNE TO CAP CROISSETTE

CLIMATE AND WEATHER.—*See* page 24.*Chart 3414.*

GOLFE DE MARSEILLE.—**Aspect.**—Golfe de Marseille is entered between Cap Couronne and Cap Croisette, about 14 miles east-south-eastward. The shores of the gulf are, for the most part, 5
rugged and rocky with high, precipitous headlands, and are free from dangers. The town and port of Marseille lie at the head of the gulf, from 5 to 7 miles northward of Cap Croisette (*Lat.* $43^{\circ} 13' N.$, *Long.* $5^{\circ} 20' E.$).

Charts 3414, 2607, 1805.

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In clear weather, vessels approaching from seaward, when about 40 miles offshore, should distinguish the rounded summit of Sainte Victoria (chart 1780), 3,182 feet (969^m9) high, situated about 16 miles north-eastward of Marseille, and Piton du Roi, 2,329 feet (709^m9) high, about 7 miles north-eastward of the port; the latter mountain 15
resembles a thumb or a truncated cone, slightly rounded at the summit. Farther eastward, Montagne de la Sainte Beaume, 3,760 feet (1,147^m9) high, flat-topped, with a vertical western side, situated about 15 miles eastward of Marseille and dominating the whole stretch of coast between that port and Toulon, about 25 miles east-south-eastward, may 20
be distinguished, as also may Le Coudon, 2,333 feet (702^m0) high, with a vertical eastern side, which overlooks Toulon from a position about 5 miles north-eastward of that town.

On a closer approach, the low, bare coast on the northern side of the gulf will be seen, rising gradually in a series of bold, irregular cliffs, 25
from Cap Couronne to Cap Méjean, 502 feet (153^m0) high, about $7\frac{1}{2}$ miles eastward; the rounded, reddish-coloured summit of Cap Méjean is the most prominent object in this vicinity.

On the south-eastern side of the gulf, the coast presents many distinctive features and the bare Monts des Marseille Veyre, 1,447 feet 30
(441^m0) high, rising close eastward of Cap Croisette, will be easily identified. About 3 miles south-eastward of Cap Croisette is Île Riou, which rises to a sharp peak, 630 feet (192^m0) high, and about 5 miles eastward of the cape are the vertical escarpments of Mont Puget or Cap Gros, 1,857 feet (566^m0) high. About $4\frac{1}{2}$ miles eastward 35
of Mont Puget are the high cliffs of Cap Canaille (page 93), and Bec de l'Aigle (page 95) lies about $3\frac{1}{2}$ miles farther south-eastward.

Charts 1780, 160, 2158a, 449.

Charts 3414, 2607, 1805.

About 13 miles south-eastward of Bec de l'Aigle, Cap Sicié (page 102) may also be identified.

About 5 miles west-south-westward of Cap Croisette is Île de Planier, and on a near approach, the islands off Marseille and a gilded figure of the Virgin on the tower of Notre Dame de la Garde, situated on an eminence in the southern part of Marseille, may be distinguished.

Currents.—In the approaches to Marseille, the currents are irregular and at no season do they set in a constant direction. In general, with a fresh breeze blowing in the offing, the current precedes it as it reaches home to the coast.

Chart 3414.

Northern side of Golfe de Marseille. — Light. — Dangers. —

Anchorage.—Beacons.—From Cap Couronne, the coast trends eastward in a succession of small coves for about $7\frac{1}{2}$ miles to Cap Méjean (*Lat. 43° 20' N., Long. 5° 14' E.*), whence it turns north-eastward for about 3 miles to Pointe de la Corbière. About $1\frac{1}{2}$ miles eastward of Cap Couronne is Anse de Boumandariel, a cove sheltered from westward by a projecting point about one cable southward of which is Îlot d'Aragnon, a low and dark islet fringed with rocks and with no safe passage between it and the point. During north-westerly winds, the cove affords anchorage with good holding ground to small vessels with local knowledge.

Port de Sausset lies about three-quarters of a mile eastward of Anse de Boumandariel, with the village of Sausset-les-Pins at its head. Château Gabriel, with a tower which is a good landmark, stands close westward of the village. There are two small jetties in the cove which provide shelter for fishing boats.

A light is exhibited, at an elevation of 33 feet (10^m1), from a white masonry tower, situated on the head of the south-eastern jetty.

Port de Carry lies about 2 miles eastward of Port de Sausset and may be identified by an old mill which stands on a cliff forming Pointe du Mouton, the western entrance point, by a tower, painted in black and white, standing near the extremity of the point, and by the beacons marking the division of the sections of the measured distance, *see* page 85. In order to avoid the rocks which fringe Pointe du Mouton, vessels from westward should keep Cap Couronne bearing 271° and in line astern with Îlot d'Aragnon. Large vessels may obtain good shelter from north-westerly winds, in depths of from $5\frac{1}{2}$ to 8 fathoms (10^m1 to 14^m6), weed, off Port de Carry. Vessels anchoring in this vicinity should avoid a rocky bank, named Plaine de Carry, by anchoring northward of the alignment of Cap Méjean and Rocher du Moulon, situated about one mile north-north-eastward, bearing about 076° , and at night, anchoring with Cap Couronne light bearing between 271° and 278° .

Port de Carry is small and is open southward. The sides of the cove are fringed by banks on which the depths are less than 10 feet (3^m0), which extend over half a cable offshore, and a shoal bank extends off the eastern entrance point; a buoy, painted black and surmounted by a staff and cone, is moored close southward of the outer edge of this bank. A truncated conical beacon, painted in black and white horizontal bands and surmounted by a white cylinder, stands on Pointe du Mouton; it forms the front mark of the alignment dividing the sections of the measured distance, *see* page 85.

Charts 1805, 2607, 1780, 160, 2158a, 449.

Chart 3414.

Vessels with local knowledge may enter the cove, passing between the rocks fringing Pointe du Mouton and the black buoy. There are depths of 22 feet (6^m7) in the middle of the cove, but there is little swinging room and it is necessary to moor. Near the head of the cove, a small jetty projects south-westward and affords shelter to vessels less than 100 feet (30^m5) in length and drawing less than 10 feet (3^m0).

Port du Rouet and Anse de Gignac are two coves, situated about one and 2 miles, respectively, eastward of Port de Carry; the former may be identified by a ruined chapel on its eastern entrance point and a viaduct with a single arch at its head; the latter, by a large viaduct with six arches at its head and a large building with a square tower at its eastern entrance point.

Port de Méjean is situated on the eastern side of Baie de la Figuière, which is entered between the western extremity of Cap Méjean and Pointe de la Loude, about 1½ cables west-north-westward. There is a large viaduct at the head of the bay and a group of buildings on its western entrance point. Pointe de la Loude is fringed by rocks which extend about 1½ cables south-eastward, and the port is only used by fishing vessels with local knowledge, and these hug the eastern entrance point when entering. Within the entrance, there are depths of from 16 to 20 feet (4^m9 to 6^m1), weed, and it affords shelter from all winds except southerly ones, which at times render entrance dangerous. Île de l'Erevine (Elevine island), 75 feet (22^m9) high and fringed by rocks, lies close offshore about half a mile eastward of Cap Méjean (Lat. 43° 20' N., Long. 5° 14' E.).

Port de Niolon lies about one mile east-north-eastward of Île de l'Erevine and about 1½ miles west-south-westward of Pointe de la Corbière.

Chart 150.

Baie de l'Estaque. — Lights. — Beacons. — Light-buoy. — Anchorage.—Between Pointe de la Corbière and Pointe de Mourepiane, a small yellowish cliff, about 1½ miles eastward, the coast curves and forms Baie de l'Estaque, a bight lying at the northern corner of Golfe de Marseille.

A light is exhibited, at an elevation of 105 feet (32^m0), from the top of a white rectangular structure, 31 feet (9^m4) in height, situated on Pointe de Mourepiane.

About 6 cables north-eastward of Pointe de la Corbière is Port de la Lave, formed between a quay extending about half a mile eastward along the coast, and a mole projecting from the coast about 3½ cables north-eastward of Pointe de la Corbière and running parallel with the quay. A light is exhibited, at an elevation of 39 feet (11^m9), from a red tank on a pylon, situated at the eastern extremity of the mole; a beacon stands on the mole, about 3 cables westward of this light-structure.

Canal de Marseille au Rhône debouches from the Rove tunnel between the western end of the quay and the root of the mole, and follows the coast between Port de la Lave and the northern entrance to Port de Marseille, about 1½ miles south-eastward, its seaward side being sheltered by a breakwater lying parallel with the coast, in which are two openings communicating with the sea.

The Rio Tinto works stand close within the quay at Port de la Lave, and northward of these works are the Riaux quarries overlooking the

Charts 3414, 1805, 2607, 1780, 160, 2158a, 449.

Chart 150.

port. Eastward of Port de la Lave, the coast decreases in elevation abruptly and becomes covered with vegetation and the houses of the suburbs of Marseille.

- 5 Port de l'Estaque lies about half a mile eastward of the Rio Tinto works with l'Estaque village close within it. A light is exhibited, at an elevation of 29 feet (8^m8), from a red tank on a pylon situated on the western side of Passe de l'Estaque, an opening in the breakwater about 1½ cables southward of Port l'Estaque.

- 10 A beacon stands on the breakwater about 2½ cables west-south-westward of Pointe de Mourepiane.

From Pointe de Mourepiane, the coast trends south-eastward for about 1½ miles to Cap Janet, a steep, yellowish point which rises to a plateau that overlooks the northern part of Port de Marseille and on

- 15 which stands a large seminary.

A wreck, to the superstructure of which is fixed a post surmounted by a green cylinder, lies about 2 cables south-eastward of Pointe de la Corbière; a light-buoy, painted in green and red and exhibiting a *green group flashing* light, showing *two flashes every nine seconds*, is moored

- 20 about half a cable southward of the wreck.

Anchorage may be obtained in Baie de l'Estaque south-eastward of Pointe de la Corbière (*Lat. 43° 21' N., Long. 5° 17' E.*), in depths of from 8 to 11 fathoms (14^m6 to 20^m1), good holding ground; this anchorage is sheltered from northerly winds but exposed to south-

- 25 westerly winds which, however, do not blow home very strongly. A good berth is in depths of about 8 fathoms (14^m6), with Port de Niolon battery in line with Rocher du Moulon, bearing 240°, and Notre Dame de la Garde in line with the old Château du Pharo (Institut Pasteur) at Marseille, bearing about 138°.

30 *Chart 3414.*

Eastern side of Golfe de Marseille.—Off-lying island.—Light.—Radiobeacon.—Dangers.—Île de Planier lies about 4½ miles westward of Cap Croisette; it is low, flat and inconspicuous from a distance.

- A light is exhibited, at an elevation of 215 feet (65^m5), from a tower
35 about 205 feet (62^m5) in height, situated on Île de Planier. A radiobeacon transmits from the light-structure. Care must be taken not to confuse this light with Faraman light, *see* page 65.

- The north-western side of Île de Planier is steep-to, but the remaining sides are fronted by rocks. La Pierre à la Bague, a rocky bank
40 with depths of from 3 to 12 feet (0^m9 to 3^m7) over it, extends nearly 3 cables south-westward from the south-western end of the island. Le Souquet, a rock with a least depth of 4 feet (1^m2) over it, lies about 1½ cables eastward, and Le Veyron, a bank with a least depth of 7 fathoms (12^m8) over it, lies about one mile east-north-eastward, of
45 the eastern extremity of the island. The sea breaks heavily on Le Veyron, and the bank should be given a berth of at least 1½ miles.

Cap Croisette to Pointe d'Endoume. — Islands and dangers.—Light.—Life-saving.—Anchorage.—Cap Croisette, the extremity

- of a peninsula extending eastward from Monts de Marseille Veyre, is
50 low and steep. Île Maire, a rocky island, 443 feet (135^m0) high, light-coloured and bare, lies close southward of Cap Croisette with an overhead cable connecting it with the mainland. Les Farillons, two small rocks, 13 feet (4^m0) high, lie close off the southern extremity of the island, and about three-quarters of a cable north-westward of its

Charts 1805, 2607, 1780, 160, 2158a, 449.

Chart 3414.

western extremity is Île Tiboulen de Maire, 131 feet (39^m9) high and steep-to. The channel between Île Maire and Île Tiboulen de Maire is navigable, but a 1½-fathom (3^m2) rocky patch lies about a quarter of a cable northward of the western extremity of Île Maire.

A light is exhibited, at an elevation of 187 feet (57^m0), from a white pylon, the upper part painted black, 22 feet (6^m7) in height, situated on Île Tiboulen de Maire.

Anse de Goudes, a small cove about 4 cables eastward of the extremity of Cap Croisette, is sheltered from northward by a small jetty. At the head of the cove are some factory buildings and a landing place.

From the eastern entrance point of Anse de Goudes, the coast trends north-north-eastward for about 2 miles to Pointe Rouge, whence it decreases in elevation and sweeps in a wide curve to Pointe du Roucas (Rocas) Blanc about 1½ miles northward, forming Plage du Prado or de Montredon. On the southern part of this stretch are several small coves separated by points, the most distinctive of the latter being Mont Rose, 282 feet (85^m9) high, about one mile northward of Anse de Goudes, on which is a battery and a prominent cross. A jetty projects about one cable north-westward from Pointe Rouge (*Lat.* 43° 15' N., *Long.* 5° 22' E.).

During offshore winds anchorage may be obtained, in depths of from 5½ to 6 fathoms (10^m1 to 11^m0), sand and weed, about half a mile north-westward of Pointe de Montredon, which lies about a quarter of a mile south-westward of Pointe Rouge. There is a landing place on the beach.

Chart 150.

From Pointe du Roucas Blanc, the coast trends north-westward for about one mile to Pointe d'Endoume. Saint Cyr village lies close northward of the former point and Port du Prophète, a small fishing harbour, is situated close north-westward of the village. There are several other coves in this stretch, the most distinctive being Anse de la Fausse Monnaie, situated about 3 cables south-eastward of Pointe d'Endoume.

A shoal bank, on which there are depths of from less than 6 feet to 3½ fathoms (1^m8 to 5^m9), extends about 3 cables southward from Pointe d'Endoume; on the outer part of the bank are the two Îles d'Endoume, on the southern of which stands a fort.

A line-throwing apparatus is maintained at Pointe d'Endoume.

An anchorage ground affording good anchorage is situated in Rade d'Endoume, south-south-westward of Îles d'Endoume, between two prohibited anchorage areas, the limits of which are indicated by pecked lines on chart 150. Large vessels should anchor, in depths of from 11 to 14 fathoms (20^m1 to 25^m6), sand and weed, with the eastern angle of the hospital on Île Ratonneau (page 82) in line with the donjon on Île d'If (page 83). Small vessels should anchor, in depths of from 6 to 7 fathoms (11^m0 to 12^m8), with the above-mentioned hospital open northward of the north-eastern extremity of Île d'If, and Pointe d'Endoume open eastward of the eastern extremity of Îles d'Endoume. Before anchoring in either of these anchorages, vessels should ascertain the nature of the bottom as there are several patches of rock amongst the weed.

Charts 150, 3414.

Prohibited anchorage.—On account of submarine cables, anchor-

Charts 3414, 1805, 2607, 1780, 160, 2158a, 449.

Charts 150, 3414.

age is prohibited southward of a line drawn 090° from a position about three-quarters of a cable southward of the signal station on Île de Pomègues (*see* below), which is indicated by a pecked line on chart 150.

5 *Chart 150.*

On account of submarine cables, anchorage is prohibited in an area between Île de Pomègues and Île Ratonneau and the mainland east-north-eastward of them, the limits of which are indicated by pecked lines on chart 150.

- 10 **Off-lying islands and dangers.—Lights.—Signal station.—Beacons.—Anchorage.—Buoy.**—Île de Pomègues lies with Cap Caveaux, its south-western extremity, about $2\frac{3}{4}$ miles west-south-westward of Pointe d'Endoume. It is high, barren and about $1\frac{1}{4}$ miles long between Cap Caveaux and Pointe Dorion, its north-eastern
15 extremity; Cap Caveaux consists of a large rock, which, from a distance, appears detached from the main island.

A light (*Lat.* 43° 16' N., *Long.* 5° 17' E.) is exhibited, at an elevation of 98 feet (29^m9), from a red metal pylon, situated on Cap Caveaux.

- A signal station, from which messages can be transmitted through
20 Lloyds, stands on a peak about $4\frac{1}{2}$ cables north-eastward of Cap Caveaux; it forms the rear mark of the alignment giving the eastern limit of the measured distance, *see* page 85.

- A beacon, consisting of a white triangular wall, with a black stripe, stands on Pointe de Carapègne, about half a mile northward of Cap
25 Caveaux, and about midway between them is a flagstaff standing on a peak at an elevation of 256 feet (78^m0). The coasts of the island are free from off-lying dangers.

- Small vessels with local knowledge may obtain sheltered anchorage, in depths of from 16 to 23 feet (4^m9 to 7^m0), in Port de Pomègues, a
30 small cove on the eastern side of the island, situated on the northern side of Pointe Pomègues, about $8\frac{1}{2}$ cables north-eastward of Cap Caveaux. Vessels approaching the harbour should keep La Sourdaras beacon (page 83) open southward of the southern coast of Île d'If, in order to avoid Roche de la Cheminée, a one-fathom (1^m8) patch
35 situated on the northern side of the harbour entrance, about $1\frac{1}{2}$ cables north-eastward of Pointe Pomègues.

- Île Ratonneau lies about $1\frac{1}{2}$ cables northward of Île de Pomègues, to which it is joined by a mole which forms the western side of Port du Frioul. The coasts of Île Ratonneau are steep and much indented,
40 and from Pointe Brégantin, its western extremity, situated about $1\frac{1}{2}$ miles northward of Cap Caveaux, the north coast of the island extends about one mile east-north-eastward to Pointe de Banc, its northern extremity, and thence about half a mile eastward to Cap de Croix, its eastern extremity. A large hospital stands about a quarter
45 of a mile south-westward of Cap de Croix.

- Baie du Grand Soufre, situated westward of the mole connecting Île de Pomègues and Île Ratonneau, affords temporary shelter during northerly winds. A good anchorage berth is in depths of about 11 fathoms (20^m1), southward of Pointe Rascas, situated about
50 $3\frac{3}{4}$ cables eastward of Pointe Brégantin. Rocher de Friou, a rock, 5 feet (1^m5) high, with rocks extending about half a cable northward of it, lies close off the southern shore of the bay, about 2 cables southward of Pointe Rascas.

A white triangular beacon, with black horizontal bands, stands on

Charts 3414, 1805, 2607, 1780, 160, 2158a, 449.

Chart 150.

Pointe Brégantin ; it forms the front mark of the alignment giving the eastern limit of the measured distance.

Îlot Tiboulén, 66 feet (20^m1) high, bare and rocky, lies about 2 cables westward of Pointe Brégantin ; a 5-fathom (9^m1) rocky patch lies 5 about half a cable eastward of the islet, and a rock, awash, lies close off Pointe Brégantin. A rocky spit, on which are Petit and Grand Salaman, the latter 23 feet (7^m0) high, extends about 1½ cables northward from Pointe Brégantin. Les Eglaudes, 43 feet (18^m1) high, lie 10 about 1½ cables eastward of Grand Salaman, on the southern side of the entrance to Havre de Morgiret, and a reef extends about half a cable north-westward from them. A rock with a depth of 7 feet (2^m1) over 15 it lies about a quarter of a cable off the southern shore of Havre de Morgiret about 1½ cables eastward of Les Eglaudes and about one cable southward of Pointe du Soldat, the north-eastern entrance point of the inlet.

In fine weather, small craft may obtain anchorage in Havre de Morgiret, over a weedy bottom. At the head of the narrow inlet is a very prominent cutting through which a road passes.

During strong southerly winds, vessels can find shelter in Mouillage 20 de Ribolles, an anchorage off the eastern part of the north coast of Île Ratonneau, in depths of about 19 fathoms (34^m7), weed. A good berth is with Rocher Mourgon (*Lat.* 43° 17' N., *Long.* 5° 20' E.), a rock close off the north-eastern extremity of Île d'If, in line with Cap de Croix, bearing 153°, and the entrance to Port de l'Éoube, about a 25 quarter of a mile westward of Cap de Croix, well open.

Basse Sainte Estève, a shoal with a least depth of 9 feet (2^m7) over it, lies about 4½ cables south-westward of Cap de Croix and about one cable offshore ; a cylindrical buoy, painted red with a white horizontal band and surmounted by two cones, points down, is moored about 30 230 feet (70^m0) southward of the shoal.

Île d'If lies with Pointe du Sec, its north-western extremity, about 3½ cables southward of Cap de Croix. It consists of a high, steep rock, covered with fortifications of which the donjon, the north-westernmost tower, is the highest. A bank on which the depths are less than 35 2 fathoms (3^m7) fronts the northern side of the island and extends about half a cable north-westward of Pointe du Sec. Rocher Mourgon lies close off the north-eastern extremity of the island ; a one-fathom (1^m8) patch lies close eastward of this rock.

A light is exhibited, at an elevation of 59 feet (18^m0), from a red tank 40 on a pylon, 21 feet (6^m4) in height, situated on the north-eastern extremity of Île d'If.

A rocky shoal, with depths of from three-quarters of a fathom to one fathom (1^m4 to 1^m8) over it, lies between Île d'If and Pointe d'Endoume. A light is exhibited, at an elevation of 38 feet (11^m6), from La Sourdaras 45 beacon, painted in black and white horizontal bands, surmounted by a black cone, point up, above a black ball, situated on the south-western extremity of the shoal, about 4½ cables east-north-eastward of Île d'If light-structure. The north-eastern extremity of the shoal is marked by Canoubier beacon, painted in black and white horizontal bands and 50 surmounted by two black cones, bases together, above a black ball, situated about 3½ cables west-north-westward of Pointe d'Endoume.

Roches Tarantan, three rocky patches with depths of 5, 5½ and 6 fathoms (9^m1, 10^m1 and 11^m0) over them, lie about 2½ cables south-

Charts 3414, 1805, 2607, 1780, 160, 2158a, 449.

Chart 150.

south-eastward, $2\frac{1}{4}$ cables southward, and 3 cables southward, respectively, of La Sourdaras beacon.

Port du Frioul.—Anchorage.—Port du Frioul is formed between the mole connecting Île de Pomègues and Île Ratonneau and a breakwater which projects south-westward from the south-eastern extremity of Île Ratonneau to within about one cable of the northern coast of Île de Pomègues.

There are depths of from $4\frac{1}{4}$ to $5\frac{1}{2}$ fathoms (7^m8 to 10^m1) in the entrance but a sunken wreck is charted in mid-channel in the entrance.

Vessels usually anchor and secure their sterns to the mole at the head of Port du Frioul; about 100 fathoms (182^m9) of cable should be veered as the bottom is steep and the holding ground, of sand and weed, is bad.

Vessels approaching Port du Frioul between Île Ratonneau and Île d'If must take care to avoid Basse Sainte Estève.

Caution.—Boats are prohibited from landing without permission either on Île de Pomègues or Île Ratonneau.

Pointe d'Endoume to Pointe du Pharo.—Dangers.—Beacons.

Light.—Light-buoy.—Between Pointe d'Endoume and Pointe du Pharo (*Lat. $43^\circ 18' N.$, Long. $5^\circ 21' E.$*), about $8\frac{1}{4}$ cables north-eastward and on the southern side of the southern entrance to Port de Marseille, the coast is moderately high and steep. The northern side of Pointe d'Endoume is fronted by a shoal bank extending about one cable off-shore, on which stand Rochers des Pendus, which shelter a small cove, Anse Malmousque, from westward. A beacon stands on the northern end of the northernmost and largest rock.

Anse des Auffes, a small cove, lies about a quarter of a mile north-eastward of Pointe d'Endoume; a beacon stands on the coast about one cable northward of the cove. About 4 cables farther north-eastward is Anse des Catalans, a somewhat wider cove at the head of which stands a large square red building which is prominent. The old Château du Pharo stands on Pointe Tête de Maure, about $1\frac{3}{4}$ cables eastward of Pointe du Pharo.

A light is exhibited, at an elevation of 38 feet (11^m6), from a white circular tower with a black lantern, 40 feet (12^m2) in height, situated on Pointe du Pharo.

Digue des Catalans, a detached breakwater, extends about a quarter of a mile north-westward from a position close off the coast about midway between Anse des Auffes and Anse des Catalans. A light-buoy, painted black, surmounted by a cone, point up, and exhibiting a *green occulting light every six seconds*, is moored close off the north-western end of Digue des Catalans.

Rade de Marseille.—Directions.—Rade de Marseille, lying between l'Estaque and Pointe du Pharo, is open westward. Anchorage in this roadstead is not recommended as it does not afford safe protection from easterly winds in winter or from the frequent sudden changes of wind. In general, vessels should not anchor in the roadstead during easterly winds with an overcast sky.

Access to Rade de Marseille is easy. Vessels approaching from southward should avoid Le Veyron and, if passing between Île d'If and Îles d'Endoume, should be careful to avoid Roches Tarantan.

Chart 3414.

Prohibited zone for submerged submarines.—Submarines are

Charts 1805, 2607, 1780, 160, 2158a, 449.

Chart 3414.

forbidden to manœuvre submerged eastward of a line drawn from Port Niolon through Cap Caveaux to Île Tiboulén de Maire.

Measured distance.—A measured distance for testing the speed of vessels extends eastward, in two sections, from off Cap Couronne to a position northward of the western end of Île Ratonneau; the dome of the Cathedral at Marseille seen between the two spires of the Protestant church of Saint Vincent de Paul, bearing 094°, is the leading mark. 5

The western limit is the alignment of the signal station and the light-structure of Cap Couronne (*Lat. 43° 20' N., Long. 5° 03' E.*). The eastern limit is the alignment of the signal station on Île de Pomègues and the triangular beacon, painted in black and white horizontal bands, situated on the western extremity of Île Ratonneau.

The division of the sections is marked by the alignment of the north-western corner of Château de Carry or Château Jourde (a large house with red roof, the highest in Carry village), and a truncated conical beacon, painted in black and white horizontal bands and surmounted by a white cylinder, situated on the western entrance point of Port de Carry. 15

The length of the western section is 26,489 feet (8,073^m7), and of the eastern section, 38,381 feet (11,698^m4); the total length is therefore 64,870 feet (19,772^m1). 20

The depth over the measured distance varies from 14 to 42 fathoms (25^m6 to 76^m8). 25

Canal de Marseille au Rhône.—This canal connects Port de Marseille with the Rhône, which it joins at Arles, a distance of about 50 miles via the Rove tunnel, Étang de Bolnon, Étang de Berre, Martigues and Port de Bouc.

In 1949, the canal was navigable by vessels not exceeding the following dimensions:—Length 60 metres (about 197 feet); width 8 metres (about 26 feet); draught 2½ metres (about 8 feet); and mast height 6 metres (about 20 feet). 30

Chart 150.

PORT DE MARSEILLE.—**General remarks.**—Port de Marseille, which extends about 3½ miles along the coast between Pointe de Mourepiane and Pointe du Pharo, is mainly composed of a series of basins communicating with one another and sheltered from seaward by a breakwater, 30 feet (9^m1) in height. Numerous moles, the sides of which form quays, project into the basins from their eastern sides and the inner side of the breakwater also forms a quay. Much of the quaying and harbour works was destroyed during hostilities, and in 1949 the basins still contained many wrecks, but at that date the wrecks still remaining were all marked by buoys, the entrances to the basins were all navigable, and the seven dry docks were all in use. The work of repairing damage and raising wrecks, as well as the extension of the port both northward and southward, is in progress (1950). The assistance of a pilot is therefore essential to vessels entering the harbour. 40 45

The port is divided into three principal sections: Nouveau Port, comprising Avant Port Nord, at the northern entrance, and the seven northern basins; Port de la Joliette (*Lat. 43° 18' N., Long. 5° 22' E.*), comprising Avant Port Sud or Avant Port de la Joliette, at the southern

Charts 3414, 1805, 2607, 1780, 160, 2158a, 449.

Chart 150.

entrance and Bassin de la Joliette ; and Port Vieux, which is the old natural harbour of Marseille.

Sea level.—Within the harbour, sudden changes in the sea level of 5 as much as 8 inches (0^m2) sometimes occur, and at the same time, currents of short duration may be experienced in the basin entrances ; this generally occurs during strong onshore winds with a high sea.

Regulations.—Regulations issued in January 1937 are in force. They prescribe that yachts, pleasure craft, fishing vessels and tugs 10 must, as a general rule, keep out of the way of any large vessel they may meet in the port or in the approaches thereto.

By reason of the works in progress, the remaining regulations are subject to frequent modification and alteration and vessels should therefore obtain information about them from the pilotage service.

15 **Pilotage.**—The normal limit of pilotage is a line drawn from Port de Carry through Île de Planier to Île de Riou ; within this line, pilotage is compulsory. Pilots must proceed ahead of any vessel requesting their assistance outside this line.

During bad weather or at night, the pilots withdraw within a line 20 drawn from Cap Méjean through Cap Caveaux to Île Maire, sheltering under the lee of Île Ratonneau or Île de Pomègues, according to the weather.

There are normally ten pilotage vessels in service, of which two are stationed at Méjean or in the lee of Île Ratonneau, according to the 25 weather ; two at Île Maire or in the lee of Île de Pomègues ; and the others, off the entrance to Port de Marseille.

While within the pilotage zone of Marseille, masters of vessels holding licenses from the pilotage authorities should display the following signals :—

30 *By day.*—A black ball about 20 inches (0^m5) in diameter, displayed before and at the same elevation as the steaming light, in a conspicuous position.

At night.—A red light, visible for a distance of not less than 2 miles, exhibited at the same elevation and in the same position as the day 35 signal.

Entrances to Port de Marseille.—Vessels may enter Port de Marseille either by the northern entrance, about half a mile south-westward of Pointe de Mourepiane, which leads to Nouveau Port through Avant Port Nord and Passe Mirabeau, or by the southern 40 entrance, between Pointe du Pharo and the south-western extremity of Digue Sainte Marie (*Lat. 43° 18' N., Long. 5° 21' E.*), about 1½ cables northward, which leads through Avant Port Sud or Avant Port de la Joliette, to Port de la Joliette northward, or to Port Vieux eastward.

Harbour signals.—Signals for regulating entry and departure of 45 vessels in Port de Marseille are made in accordance with the regulations, see page 10. For Nouveau Port, the signals are displayed from a framework mast and yard, standing on the north-eastern side of Passe du Cap Janet, about a quarter of a mile west-south-westward of Cap Janet. In 1949, this signal mast was not in use. For Port de la 50 Joliette and Port Vieux, signals are displayed from a signal station with a flagstaff, situated close to the south-western extremity of Digue Sainte Marie.

Avant Port Nord.—Entrance.—Light-buoys.—Avant Port Nord, the north-western and south-western sides of which were under con-

Charts 3414, 1805, 2607, 1780, 160, 2158a, 449.

Chart 150.

struction in 1949, will, when completed, form a basin approximately square, with sides about 820 yards (749^m8) long. The south-western side will be formed by the extension north-westward of the main outer breakwater; the seaward end of this extension is marked by a light-buoy, painted black, surmounted by a black cone and exhibiting a *green group occulting* light having *three eclipses every twelve seconds*. The north-western side is formed by Digue de Saumaty, a breakwater under construction, which projects south-westward from a position on Canal de Marseille au Rhône breakwater, about 2½ cables south-westward of Pointe de Mourepiane. The south-western end of Digue de Saumaty is marked by a light-buoy, painted red, surmounted by a red cylinder and exhibiting a *red fixed* light. The northern entrance to Port de Marseille lies between these two light-buoys.

About 4 cables south-eastward of Digue de Saumaty, two breakwaters form the south-eastern side of Avant Port Nord and separate it from Bassin Mirabeau. The northern of these breakwaters extends about 1½ cables south-south-westward from a position on Canal de Marseille au Rhône breakwater, about 2¾ cables south-south-eastward of Pointe de Mourepiane. The southern breakwater extends about 1½ cables south-westward, and is detached, with a passage about one cable wide at either end; in 1949, the navigable width of both passages was much reduced by wrecks.

The main entrance to Canal de Marseille au Rhône lies at the northern corner of Avant Port Nord; it is about three-quarters of a cable wide but in 1949 this entrance was much reduced in width by sunken wrecks.

Passe Mirabeau. — Lights. — Light-buoys. — Passe Mirabeau, the main entrance to Bassin Mirabeau from Avant Port Nord, is entered between the south-western end of the detached breakwater and the inner side of the main outer breakwater and, as stated above, in 1949 the navigable channel was much reduced in width by foul ground and sunken wrecks; it is indicated on the chart by pecked lines and, in 1949, had a depth of 46 feet (14^m0).

A light is exhibited, at an elevation of 36 feet (11^m0), from a red pylon surmounted by a disc, situated on the south-western extremity of the detached breakwater, and marks the north-eastern side of the navigable channel.

Two conical light-buoys, each painted black and exhibiting a *green fixed* light, are moored on the south-western side of the navigable channel, and mark the north-western and south-eastern ends, respectively, of the foul ground.

A light is exhibited, at an elevation of 35 feet (10^m7), from a red pylon with a hut situated on the main outer breakwater, about one cable south-westward from the light-structure on the detached breakwater. In 1949, this light was extinguished.

Nouveau Port. — Lights. — Depths. — Nouveau Port is composed of a series of basins between Avant Port Nord and Bassin de la Joliette (Lat. 43° 18' N., Long. 5° 22' E.), about 2¾ miles south-eastward. From north to south these basins are named: Bassin Mirabeau with Darse Sud; Bassin du Président Wilson; Bassin de la Pinède; Bassin National; Bassin de la Gare Maritime; Bassin d'Arenc and Bassin du Lazaret.

Bassin Mirabeau. — This basin extends about three-quarters of

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Chart 150.

a mile south-eastward between Passe Mirabeau and Traverse du Cap Janet, which forms its south-eastern side. The south-eastern part of Canal de Marseille au Rhône breakwater, which formerly formed the north-eastern side of Bassin Mirabeau, is being demolished and the area between it and the coast is being reclaimed and lined by quays (1951). In the southern part of the basin, Môle H projects about $1\frac{1}{2}$ cables eastward, with depths alongside of from $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms (6^m4 to 7^m8). Môle H will form the root of Môle Leon Gourret, a proposed new mole, which, extending north-westward from the extremity of Môle H, will cut Bassin Mirabeau into two parts.

There are three mooring buoys in the eastern part of the basin and a fourth in the northern part.

Darse Sud.—Darse Sud is that part of Bassin Mirabeau between Môle H and the eastern arm of Traverse du Cap Janet, about 2 cables southward; the quays on its eastern and southern sides are served by the railway. The depths in Darse Sud vary between 11 and 5 fathoms (20^m1 and 9^m1) and several wrecks are charted close to the quays.

Bassin du Président Wilson.—This basin is entered from Bassin Mirabeau by Passe du Cap Janet, an entrance 328 feet (100^m0) wide. Lights are exhibited, at elevations of 20 and 24 feet (6^m1 and 7^m3), from pylons 16 feet (4^m9) in height, situated on the north-eastern and south-western sides, respectively, of Passe du Cap Janet. Môle G projects at an angle into the basin from its eastern side, and on the northern side of Môle G, a passage communicates with Bassin de Remisage, or the laying-up basin.

Bassin du Président Wilson is accessible to vessels up to a length of 820 feet (249^m9). The depths vary from 13 to $6\frac{1}{2}$ fathoms (23^m8 to 11^m9) and there is normally a quay frontage of 8,477 feet ($2,583^m7$).

Bassin de la Pinède.—This basin is entered from Bassin du Président Wilson by Passe de la Madrague, about 328 feet (100^m0) wide. Lights are exhibited, at an elevation of 33 feet (10^m1), from grey iron towers, 16 feet (4^m9) in height, situated on the north-eastern and south-western sides, respectively, of Passe de la Madrague. In 1949, these lights were extinguished.

Môles E and F project from the eastern side of the basin and between the latter mole and Traverse de la Madrague, which forms the northern side of the basin, is the entrance to Bassin du Pétrole, about 130 feet (39^m6) wide.

Bassin de la Pinède is accessible to vessels up to 656 feet (199^m9) in length and the depths vary from 11 to $4\frac{1}{2}$ fathoms (20^m1 to 8^m2). There is normally a quay frontage of over 9,000 feet ($2,743^m2$) in this basin.

Bassin National.—Bassin National is entered from Bassin de la Pinède through Passe de la Pinède, an entrance 236 feet (71^m9) wide. A bascule bridge, lifting in two parts on either side, spans the entrance. A *flashing* light is exhibited from the eastern abutment of this bridge. The light shows *green* when the bridge is fully lifted and the entrance is open for the passage of vessels, *orange* when the bridge is being raised or lowered, and *red* when the bridge is fully lowered. At night, if the bridge cannot be raised, two *red* lights, disposed vertically, are displayed from the eastern abutment. In 1949, this flashing light was extinguished.

Môles B, C and D project from the eastern side of the basin and

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Chart 150.

between the two latter moles is the entrance to Bassin de Réparations (*Lat.* 43° 19' N., *Long.* 5° 22' E.), which gives access to seven dry docks and which contains several mooring buoys.

Bassin National can accommodate vessels of 656 feet (199^m9) in length and it contains several mooring buoys. There is a least depth of 26 feet (7^m8) alongside the three moles and depths of from 18 to 25 feet (5^m5 to 7^m6) alongside the quays at the sides of the basin. There is normally a quay frontage of 12,200 feet (3,718^m6) in the basin.

Bassin de la Gare Maritime.—This basin is entered from Bassin National through Passe de l'Abattoir, an entrance 164 feet (50^m0) wide; in 1949, work was in progress enlarging Passe de l'Abattoir.

A light is exhibited, at an elevation of 23 feet (7^m0), from a red iron pylon situated in mid-channel in Passe de l'Abattoir.

Bassin de la Gare Maritime can accommodate vessels of a length of about 500 feet (152^m4). Môle A projects from the north-eastern side of the basin with depths alongside of from 20 to 26 feet (6^m1 to 7^m9) and there are depths of from 13 to 20 feet (4^m0 to 6^m1) alongside the quays at the sides of the basin. There is normally a quay frontage of about 7,000 feet (2,133^m8) in Bassin de la Gare Maritime.

Bassin d'Arenc and Bassin du Lazaret.—Bassin d'Arenc and Bassin du Lazaret form a double basin separated by Môle du Lazaret, round the head of which there is an open channel. Bassin d'Arenc is entered from Bassin de la Gare Maritime by Passe d'Arenc, 164 feet (50^m0) wide.

Bassin du Lazaret is the southernmost basin of Nouveau Port. It is connected with Bassin de la Joliette by an entrance in Traverse Jean Charcot, which separates Nouveau Port from Port de la Joliette. This entrance is about 400 feet (121^m9) wide and is spanned by a swing bridge; in 1949, work was in progress enlarging this entrance.

Bassins d'Arenc and du Lazaret are accessible to vessels up to about 500 feet (152^m4) in length and drawing less than 30 feet (9^m1). There are depths of from 26 to 30 feet (7^m9 to 9^m1) alongside the quays and there is normally a quay frontage of 7,356 feet (2,242^m1) in the double basin.

Port de la Joliette.—Lights.—Depths.—Port de la Joliette consists of Avant Port de la Joliette or Avant Port Sud and Bassin de la Joliette. The seaward entrance to Avant Port Sud lies between Pointe du Pharo (page 84) and the extremity of Digue Sainte Marie about 1½ cables northward. Digue Sainte Marie is a mole extending about 2 cables south-westward from the southern end of the main outer breakwater; its southern part is provided with bollards and vessels of any size may obtain a temporary berth alongside it.

Pointe du Pharo light is described on page 84. A light is exhibited, at an elevation of 36 feet (11^m0), from a pylon with a red tank, situated at the extremity of Digue Sainte Marie.

Bassin de la Joliette.—This basin is entered from Avant Port Sud by Passe de la Joliette, an entrance about 328 feet (100^m0) wide between the root of Digue Sainte Marie (*Lat.* 43° 18' N., *Long.* 5° 22' E.) and Digue Fort Saint Jean, a mole which forms the southern side of the basin.

A light is exhibited, at an elevation of 25 feet (7^m6), from a red iron tower, situated on the north-western side of Passe de la Joliette, at the junction of Digue Sainte Marie with the main outer breakwater.

Môles J1, J2, J3 and J4 project south-westward from the eastern

Chart 150.

side of the basin. Vessels of a maximum length of 426 feet (129^m8) can be accommodated in the basin, which is dredged to a depth of 28 feet (8^m5) except at its southern corner where the area between 5 Môle J4 and Digue du Fort Saint Jean is being reclaimed; in 1950, this work was nearing completion.

There is normally a quay frontage of 7,086 feet (2,159^m8) in Bassin de la Joliette.

As stated above, an entrance in Traverse Jean Charcot, which forms 10 the northern side of Bassin de la Joliette, communicates with Bassin du Lazaret.

Port Vieux.—Lights.—Port Vieux is the old natural harbour of Marseille. It is entered between Pointe Tête du Maure (page 84) and Fort Saint Jean, about 1½ cables eastward, and extends south- 15 eastward and eastward for about 6 cables, narrowing to a width of about 230 feet (70^m1) between Fort Saint Nicolas and the southern extremity of Fort Saint Jean, about 1½ cables south-eastward of the entrance.

A light is exhibited, at an elevation of 28 feet (8^m5), from a black 20 iron framework structure on a hut, situated on the northern extremity of Fort Saint Nicolas, about 2¼ cables east-south-eastward of Pointe Tête du Maure.

A light is exhibited, at an elevation of 39 feet (11^m9), from a red pylon, 21 feet (6^m4) in height, situated at the south-western angle of 25 Fort Saint Jean, about three-quarters of a cable north-north-westward of Fort Saint Nicolas light-structure.

On the eastern side of Fort Saint Nicolas is Bassin du Carénage, a small basin with an entrance 53 feet (16^m2) wide and depths of from 13 to 16 feet (4^m0 to 4^m9). Close westward of Fort Saint Nicolas is 30 Anse de Réserve, a small bay in which the depths are shoal; in 1947, a black conical buoy was moored about three-quarters of a cable westward of Fort Saint Nicolas light-structure and marked the middle of the northern edge of a foul area in the bay.

Port Vieux is used principally by coasters, fishing vessels and small 35 craft of all descriptions and also by vessels being dismantled and broken up. Frequent dredging maintains a depth of about 20 feet (6^m1) in the middle of the harbour and of 13 feet (4^m0) alongside the quays; an area alongside Quai des Belges (*Lat. 43° 18' N., Long. 5° 22' E.*), the quay on the eastern side of the harbour, is reserved for French 40 men-of-war, and a mooring buoy for the use of these vessels is moored about three-quarters of a cable off that quay.

Town. — Port facilities. — Communications. — Marseille is the principal seaport of France and is situated on the slopes of hills surrounding Port Vieux. The Cathedral stands on a terrace close east- 45 ward of the southern part of Bassin de la Joliette and the church of Notre Dame de la Garde is situated on the summit of a hill, 531 feet (161^m8) high, southward of Port Vieux, with a gilded statue of the Virgin over its belfry. In 1948, the population of Marseille was about 914,000.

50 In 1947, 2,838 ships of a total tonnage of 5,712,127 entered the port.

British Consular officers reside in Marseille.

Large stocks of coal are normally maintained. Coal lighters are kept filled and are brought alongside vessels on request.

Charts 3314, 1805, 2607, 1780, 160, 2158a, 449.

Chart 150.

Large stocks of fuel oil and Diesel oil are maintained. Oil can be supplied in lighters of 250 tons capacity or can be embarked alongside the following quays :—Môle G, western and southern sides ; Môle F ; Môle de la Madrague, southern side, and in Bassin à Pétrole. 5

Fresh provisions and supplies of all kinds are plentiful. Water is laid on to the quays and is also supplied by water boats.

The port is equipped with all modern appliances for working cargo. Numerous tugs are available.

All repairs to hull, boilers or machinery can be undertaken. There 10 are seven dry docks ; for details of the largest dry dock, *see* Appendix I, page 519.

There are several hospitals and there is a sailor's home.

Marseille has regular sea communication with all parts of the world.

All the basins in Nouveau Port and Port de la Joliette (*Lat.* 43° 15 18' N., *Long.* 5° 22' E.) are served by the railway ; there are six railway stations in Marseille.

There is regular air service to all parts from Marignane airfield, about 7 miles north-westward of the port and close southward of Étang de Berre. 20

Deratisation.—Deratisation can be carried out, *see* page 18.

Climatic table.—*See* page 39.

Charts 3314, 1805, 2607, 1780, 160, 2158a, 449.

CHAPTER IV

SOUTHERN COAST OF FRANCE—CAP CROISSETTE TO CAP CAMARAT

CLIMATE AND WEATHER.—See page 24.

Chart 2607.

CAP CROISSETTE TO CAP SICIÉ.—**Aspect.**—Between Cap Croisette (*Lat. 43° 13' N., Long. 5° 20' E.*) and Cap Sicié, about 25 miles
5 east-south-eastward, the coast is high and rugged. Montagne de la Sainte Beaume, with a very abrupt fall on its western side, is the most prominent object in the background along this stretch, and this and other peaks useful to the mariner are described on page 77.

On approaching the coast, vessels may identify Île Maire, close off
10 Cap Croisette, Île Riou, about 2½ miles south-eastward of Île Maire, Bec de l'Aigle, about 9 miles eastward of Île Riou, and Cap Sicié, about 13 miles east-south-eastward of Bec de l'Aigle. See view A on charts 2608 and 2607.

Chart 3414.

15 **Off-lying islands.**—**Dangers.**—**Beacon.**—Île Maire and Île Tiboulén de Maire are described on page 80.

Île Jarros (Jaire), 171 feet (52^m1) high and bare, lies with its north-western extremity about 1½ miles south-eastward of Cap Croisette; Îlot de Jarron lies close off its north-western extremity. Île Caléséragne (Calseraigne), 151 feet (46^m1) high and flat, lies about 6 cables
20 east-south-eastward of the south-eastern extremity of Île Jarros; its southern extremity is fringed with rocks. See view facing page 104. Île Riou, 630 feet (192^m0) high and bare, lies about half a mile southward of Île Caléséragne and is very prominent, especially when seen
25 from eastward; it is surrounded by several islets and above-water rocks. Îlot Moyade, 13 feet (4^m0) high, lies about one cable south-westward of its south-western extremity; Les Moyadons, two above-water rocks, lie about 2 cables westward of the same point. Les Empereurs, two rocks 82 and 36 feet (25^m0 and 11^m0) high, respectively, lie about a quarter of a mile south-westward of Pointe Caramassaigne, the eastern extremity of the island; and Grand and Petit Congloué, two steep-to islets, the former of which is 115 feet (35^m0)
30 high, lie about one cable north-eastward and 3 cables north-north-westward, respectively, of Pointe Caramassaigne.

35 Écueil de Miet, a rocky shoal with a depth of 1½ fathoms (2^m3) over it, lies about 2 cables south-eastward of the south-eastern extremity of Île Jarros, and a shoal bank, with depths of from 4 to 4½ fathoms

Charts 1805, 2607, 1780, 160, 2158a, 449.

Chart 3414.

(7^m3 to 8^m7), extends about one cable northward of the north-western extremity of that island.

Écueil du Milieu, a 1 $\frac{3}{4}$ -fathom (3^m2) shoal, lies about a quarter of a mile southward of the eastern extremity of Île Caleseragne and about the same distance northward of the northern coast of Île Riou; an iron beacon, 20 feet (6^m1) high, painted in red and black horizontal bands and surmounted by a red sphere, stands on Écueil du Milieu.

A spit, with depths of 4 $\frac{1}{2}$ fathoms (8^m7) over it, extends about one cable offshore from the north coast of Île Riou, about 4 cables eastward of Pointe Fontagne, its north-western extremity.

Coast.—Cap Croisette to Pointe Cacao.—Anchorage.—Between Cap Croisette and Pointe Cacao, about 7 $\frac{1}{2}$ miles eastward, the coast is high and is indented by many small coves. A dismantled signal station, consisting of a yellow tower, stands on Pointe de Cal-
longue, about one mile eastward of Cap Croisette.

Plateau de Chèvres, a rocky bank with depths of from 3 $\frac{1}{2}$ to 4 $\frac{1}{2}$ fathoms (5^m9 to 7^m8) over it, fronts the coast between about 4 and 8 cables eastward of Pointe de Cal-
longue and extends nearly half a mile offshore towards Île Jarros (*Lat. 43° 12' N., Long. 5° 22' E.*). Vessels may obtain anchorage in Mouillage du Four à Chaux, eastward of Plateau de Chèvres, with good shelter from northerly and north-westerly winds but completely exposed eastward. A good berth is in depths of from 5 $\frac{1}{2}$ to 7 fathoms (10^m1 to 12^m8), weed, with La Mounine, a low rock close to the coast about 4 cables east-south-eastward of the dismantled signal station, in line with the northern extremity of Île Maire, bearing about 287°, and Pointe Fontagne bearing about 179° and open eastward of the eastern extremity of Île Jarros.

Pointe de Marseille Veyre lies about a quarter of a mile eastward of La Mounine and close eastward of the point is Calanque de la Batterie, a small cove with a battery on its eastern entrance point. Between Calanque de la Batterie and Bec de Sormiou, a low, bare and light-coloured point about 2 miles eastward, the coast forms a bight named Calanque de Courtiou.

Calanque de Sormiou is entered between Bec de Sormiou and Cap Morgiou, a clif-
fy cape crowned with two batteries, about one mile eastward. The head of the cove is protected from south-westward by Bec de Sormiou and is reported to afford good shelter to small craft drawing up to 13 feet (4^m0); landing is easy.

Calanque de Morgiou is entered between Cap Morgiou and Pointe de Castel Vieil, a flat-topped, bare and perpendicular headland, situated about 2 miles eastward; about three-quarters of a mile north-eastward of Cap Morgiou and on the north-eastern shore of the bight, is La Grande Chandelle, a remarkable square mass of rock, 1,476 feet (449^m0) high, which is prominent when seen from either eastward or westward.

Between Pointe de Castel Vieil and Pointe Cacao, about 4 cables eastward, is the common entrance to two narrow coves, Calanque d'Envau being the western and Calanque de Port Pin, the eastern. There are depths of about 14 fathoms (25^m6) at the entrance, decreasing gradually to the heads of both coves, where, during very fine weather, small craft with local knowledge may obtain anchorage.

Baie de Cassis. — Off-lying danger. — Light. — Anchorage. — Baie de Cassis is entered between Pointe Cacao and Cap Canaille,

Charts 2607, 1780, 160, 2158a, 449.

Chart 3414.

about $1\frac{1}{2}$ miles eastward, and the bay extends about one mile northward to the harbour and town of Cassis at its head. The chapel of Sainte Croix, the tower of which is destroyed, stands on a hill, 495 feet
5 (150^m9) high, about half a mile north-eastward of the town. A church tower in the northern part of the town and the Château de Cassis, close south-south-eastward of the town, may also be distinguished.

Banc de la Cassidaigne, situated about $3\frac{1}{2}$ miles south-south-eastward of Pointe Cacao, is a rocky shoal, awash at its northern end and with
10 depths of 2 fathoms (3^m7) on its southern part.

A light (*Lat.* 43° 09' N., *Long.* 5° 33' E.) is exhibited, at an elevation of 77 feet (23^m5), from a masonry tower, painted in red and black horizontal bands and surmounted by a sphere above a tank, situated on the northern part of Banc de la Cassidaigne. The tower is fitted
15 with a radar reflector.

From Pointe Cacao, the coast trends north-eastward for about $1\frac{1}{2}$ miles to Port de Cassis, and is white and arid. About 3 cables north-eastward of Pointe Cacao, is the entrance to Port Miou, a narrow cove. On the cliff forming the northern entrance point of the cove, is
20 the chapel of Notre Dame de Port Miou, a small square building without a tower, and about half-way up the side of a hill on the coast between Port Miou and Port Pin, is a custom house. Small craft with local knowledge may obtain anchorage in Port Miou.

Vessels may obtain anchorage in Baie de Cassis, in depths of from
25 $5\frac{1}{2}$ to $6\frac{1}{2}$ fathoms (10^m1 to 11^m9), sand and weed, southward of the head of the mole at Port de Cassis. The holding ground is good but the anchorage is exposed southward and winds from that direction, if strong, send in a considerable sea.

Port de Cassis.—Lights.—Port de Cassis is sheltered by a mole
30 extending about $1\frac{1}{2}$ cables westward from the eastern shore near the head of the bay. The northern side of the mole is fringed by a shoal bank and its extremity should be given a berth of 45 yards (41^m1). The harbour entrance is about 60 yards (54^m9) wide and the harbour is available to vessels drawing up to 13 feet (4^m0); a current setting
35 out of the entrance, which is caused by a large spring on the northern shore of the harbour, makes entry rather difficult. The depths are shoal on the northern side of the harbour, and vessels usually moor with hawsers out from both bows and both quarters, head towards the mole. There are quays on the eastern side of the harbour which were
40 damaged during hostilities; in 1949, some of these quays were still unusable.

A light is exhibited, at an elevation of 53 feet (16^m2), from a white masonry tower, the upper part painted black, 43 feet (6^m4) in height, situated on the head of the mole.

45 A light is exhibited, at an elevation of 39 feet (11^m9), from a red metal column on an iron hut, 23 feet (7^m0) in height, situated on the western side of the entrance to Port de Cassis.

Cap Canaille to Bec de l'Aigle.—Signal station.—Between Cap Canaille and Bec de l'Aigle, about $3\frac{1}{4}$ miles south-eastward, the coast is
50 high and composed of reddish cliffs. La Ciotat signal station stands on the summit of the cliffs at an elevation of 1,063 feet (324^m0), about $1\frac{1}{2}$ miles south-eastward of Cap Canaille. The chapel of Notre Dame de la Garde is situated at an elevation of 262 feet (79^m9) about one mile south-eastward of La Ciotat signal station and about $1\frac{1}{2}$ cables farther

Chart 3414.

south-eastward, and on the western entrance point of a small cove named Anse de Figuerolles, is Rocher Capucin, a pointed rocky peak. Both Notre Dame de la Garde and Rocher Capucin are prominent from seaward. Bec de l'Aigle, 509 feet (154^m9) high and situated about 5 half a mile south-eastward of Rocher Capucin, is composed of bare yellowish cliffs which are perpendicular for half-way down from their summits.

Chart 2607.

Offshore depths.—Banc du Blauquières is the outer part of a 10 tongue of the shore bank on which the depths are less than 100 fathoms (182^m9), which extends about 11½ miles southward of Bec de l'Aigle. Les Broquets is a smaller tongue of the shore bank, situated about 9 miles south-eastward of Bec de l'Aigle.

Chart 2819, plan of Baie de La Ciotat.

15

Baie de La Ciotat.—General remarks.—Baie de La Ciotat is entered between Bec de l'Aigle (*Lat. 43° 10' N., Long. 5° 36' E.*) and Pointe du Deffend or Cap d'Alon, about 4 miles eastward. It is sheltered from westerly and north-westerly winds, but is exposed to those from eastward and southward. About 8 miles northward of the 20 head of the bay the Sainte Beume range dominates the background. See view A on charts 2607 and 2608.

On the western side of the bay, about three-quarters of a mile northward of Bec de l'Aigle, is the harbour and town of La Ciotat, which may be identified by the shipyard, cranes and workshops of the 25 Compagnie des Messageries Maritimes on the southern side of the harbour, and in the town on the northern side of the harbour, the many-sided tower of the town hall and a square church tower. On a closer approach, Château Delacour, a large white building about a quarter of a mile northward of the town, and Château de Tours, 30 surrounded by trees, enclosed by a grey wall and situated on Petit Cap Saint Louis, a low and rocky point about 3 cables farther north-eastward, may be identified. Midway between these two châteaux is Château Bizalion, the square tower of which forms the rear mark of the alignment dividing the sections of the measured distance, see page 99. 35

Pointe du Deffend, the eastern entrance point of Baie de La Ciotat, may be identified by its white cliffs, 95 feet (25^m0) high, which appear to be cut off from the higher land eastward. About one mile north-north-westward of Pointe du Deffend is Pointe Grenier, wooded and crowned by a battery in ruins, whence the coast recedes and forms 40 Baie des Lèques, which is entered between Pointe Grenier and Cap Saint Louis about one mile northward. The village of Les Lèques is situated on the northern shore of the bay about half a mile eastward of Cap Saint Louis; a jetty projects about half a cable southward from the shore abreast the village. South-eastward of the village, the 45 shore of the bay is a marshy beach.

Between Cap Saint Louis and Petit Cap Saint Louis, about 2½ miles westward, the northern shore of Baie de La Ciotat is low.

Off-lying island.—Dangers.—Beacon.—Île Verte, 154 feet (46^m9) high, lies about 3 cables eastward of Bec de l'Aigle; a cross 50 stands on a summit in the eastern part of the island. The northern coast of Île Verte is fringed by a shoal bank which extends in places about half a cable offshore.

Canonnière du Sud, a rocky shoal with a depth of 3 feet (0^m9) over it,

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 2819, plan of Baie de La Ciotat.

lies about one cable westward of the western extremity of Île Verte, with depths of 15 fathoms (37^m4) in the channel between them. A beacon, consisting of a black masonry tower, surmounted by a cone, 26 feet (7^m9) in height, stands on Canonnier du Sud.

Canonnier du Nord is a rocky patch over which there is a depth of 2 fathoms (3^m7), which lies about half a cable north-westward of the north-western extremity of Île Verte, with depths of 8 and 10 fathoms (14^m6 and 18^m3) in the narrow channel between them.

10 **Port de La Ciotat. — Depths. — Lights. — Port facilities. — Life-saving.**—Port de La Ciotat is enclosed by two moles which project east-north-eastward and south-eastward from the western shore of Baie de La Ciotat, leaving an entrance about three-quarters of a cable wide in which there is a depth of 24½ feet (7^m5). Within the entrance, 15 the middle part of the harbour is dredged to a depth of 23 feet (7^m0) and there are depths of about 10 feet (3^m0) alongside the quays.

A light is exhibited, at an elevation of 51 feet (15^m5), from a white tower, the upper part painted red, 43 feet (13^m1) in height, situated at the head of Môle Sud (Neuf) (*Lat.* 43° 10' N., *Long.* 5° 37' E.), on 20 the southern side of the harbour entrance.

A light is exhibited, at an elevation of 47 feet (14^m3), from a white tower, the upper part painted black, 39 feet (11^m9) in height, situated at the head of Môle Bérourard, on the northern side of the harbour entrance.

25 The town of La Ciotat lies on the northern and western sides of the harbour; it owes its importance to the presence of the shipyard of Compagnie des Messageries Maritimes. A mooring buoy lies close off the harbour entrance; it is used to assist the larger Messageries Maritimes vessels in entering or leaving harbour and other vessels 30 should ascertain if the buoy will be required before securing to it. Vessels up to a length of about 600 feet (182^m9) can enter the harbour.

Fresh water is laid on to the quays. Working appliances include a floating sheer legs of 70 tons capacity. One small tug is available.

Repairs can be undertaken and there is a dry dock; for details see 35 Appendix I, page 519.

A line-throwing apparatus is maintained at La Ciotat.

Anchorage.—Prohibited anchorage.—Light.—In Rade de La Ciotat, the roadstead close eastward of the town, the bottom is sand and weed and affords poor holding ground, vessels being liable to drag 40 in strong winds. Anchorage should be obtained within 3 cables of the coast to get as much shelter as possible from the land and to avoid the steep slope of the bottom, which occurs farther offshore. The usual anchorage is between the alignment of Rocher Capucin (page 95) and La Ciotat town hall on the north, and La Ciotat signal station (page 94) 45 in line with the light-structure at the head of Môle Sud on the south, but in view of the possible presence of sunken mines in the entrance and close approach to the harbour, anchorage is prohibited in this area and vessels should anchor northward of a line drawn 090° from the town hall in La Ciotat.

50 Rade de Ceyreste, about three-quarters of a mile north-eastward of the entrance to Port de La Ciotat, affords good anchorage. A good berth is with the Chapel of Notre Dame de la Garde (page 94) seen midway between the tower of La Ciotat town hall and the light-structure on Môle Bérourard.

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 2819, plan of Baie de La Ciotat.

Anchorage may be obtained in Mouillage des Lèques in the northern part of Baie des Lèques, over a sandy bottom, good holding ground, during offshore winds, but with onshore winds the anchorage is untenable.

A light is exhibited from a post situated at the head of the jetty at Les Lèques.

There is anchorage in Mouillage de Tarente, in the south-eastern part of Baie des Lèques, over a bottom of weed, good holding ground, which affords good shelter during easterly winds, but this anchorage is untenable with winds from north through west to south. There is a landing place close to Tour de Tarente, situated on the southern shore of Baie des Lèques about half a mile east-north-eastward of Pointe Grenier.

*Chart 2819, plan of Baie de Bandol and Baie de Sanary.***Pointe du Deffend to Île de Bandol.—Islands and dangers.—**

From Pointe du Deffend (*Lat.* 43° 09' N., *Long.* 5° 42' E.), the rocky coast trends east-south-eastward for about 2½ miles to Île de Bandol. About half a mile eastward of Pointe du Deffend is a small cove named Port d'Alon, off the entrance to which, about 1½ cables southward of its western entrance point, lies Sèche d'Alon, a rocky shoal with a depth of 2 feet (0^m6) over it. A shoal spit, with a depth of 3¾ fathoms (6^m9) over it, extends about one cable south-eastward from the western entrance point of Port d'Alon.

Baie de la Moutte, entered between the eastern entrance point of Port d'Alon and Pointe Engravier, about three-quarters of a mile south-eastward, is sheltered from northerly winds; its eastern side consists of reddish cliffs at the northern end of which is La Galère, a rock, connected with the coast by a drying spit.

Île Rousse, 52 feet (15^m8) high and of the same reddish tint as the neighbouring cliffs of the mainland, lies about a quarter of a mile south-eastward of Pointe Engravier and about one cable offshore. There is a narrow channel with a depth of 1½ fathoms (2^m7) midway between Île Rousse and the coast of the mainland.

About 1½ miles eastward of Pointe Engravier, a promontory projects about 2½ cables southward from the adjoining coast, with Château de Bandol standing at an elevation of 82 feet (25^m0) on its extremity. Between the western side of the promontory and the coast of the mainland is a small and shallow bay named Creux de Bandol.

A bank, on which there are depths of from a quarter of a fathom to one fathom (0^m5 to 1^m8), extends about 2¾ cables southward from the promontory containing Château de Bandol, and on its southern end is Île de Bandol, which is distinctive on account of its red rocks; obstructions exist on the bank between Île de Bandol and the southern end of the promontory.

Baie de Bandol.—Light.—Dangers.—Beacons.—Baie de Bandol is entered between Île de Bandol and Pointe de la Cride, a low point, crowned with a ruined battery and situated about one mile south-eastward. On the western side of the bay the harbour and town of Bandol may be seen about half a mile northward of Île de Bandol, and about three-quarters of a mile farther east-north-eastward and close within the head of the bay, is Viaduc d'Aran, a nine-arched viaduct which is prominent from seaward.

A light is exhibited, at an elevation of 29 feet (8^m8), from a white

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 2819, plan of Baie de Bandol and Baie de Sanary.

column, 19 feet (5^m8) in height, situated on the head of a mole at Port de Bandol, about 3 cables east-north-eastward of Château de Bandol.

- La Fourmigue, a rock about 3 feet (0^m9) high, lies on a shoal about
 5 1½ cables eastward of the eastern extremity of Île de Bandol; a beacon, consisting of a masonry tower, 33 feet (10^m1) high, and painted in red and black horizontal bands, stands on La Fourmigue. Vessels should not attempt to pass between this tower and Île de Bandol.

- A rocky spit on which the depths are less than 3 fathoms (5^m5)
 10 extends about 1½ cables south-westward from Pointe de la Cride; a beacon, consisting of a masonry tower, 30 feet (9^m1) high, the upper part painted black and the lower part white, surmounted by two cones, points together, stands on the extremity of the rocky spit.

- Anchorage.—Directions.**—Although exposed south-westward,
 15 vessels with good ground tackle and two anchors can lie in Baie de Bandol in any weather. A good anchorage berth is in depths of 6½ to 7½ fathoms (11^m9 to 13^m7), sand and weed, good holding ground, with La Cride beacon in line with the light-structure on Île du Grand Rouveau (*Lat.* 43° 05' N., *Long.* 5° 46' E.) (page 100), bearing about
 20 174°.

There is a patch of foul ground, due to sunken moorings, about 1½ cables east-north-eastward of the head of the mole at Port de Bandol.

- At night, vessels from westward should keep the two lights at the
 25 entrance to Port de La Ciotat well open south-westward of Pointe du Deffend until the light at Port de Bandol is well open eastward of Île de Bandol. When altering course into Baie de Bandol, care must be taken to avoid La Fourmigue. The *white* sector of Port de Bandol light, between the bearing of 348° and 002°, leads eastward of La
 30 Fourmigue and westward of the rocky spit extending from Pointe de la Cride, and vessels from southward should approach Baie de Bandol in this sector until northward of the latitude of La Cride beacon.

- Port de Bandol.**—Port de Bandol is formed by a mole which extends about 2½ cables east-south-eastward and north-eastward from
 35 the coast eastward of Château de Bandol, and a breakwater extending south-south-eastward from the coast to within about half a cable of the head of the mole. Shoal banks extend off the western and north-eastern sides of the harbour, and it can only accommodate vessels drawing not more than 11 feet (3^m4); the harbour has a tendency to
 40 silt up. The edges of the shoal banks in the harbour are marked by four red buoys on the north-eastern, and three black buoys on the south-western, sides. Vessels using the harbour anchor over a bottom of mud and weed and secure their sterns to the mole.

- Coast.—Danger.**—From Pointe de la Cride, the coast trends
 45 eastward for about 11 cables to Pointe du Bau Rouge, a rounded point of a reddish colour; Tour de Port Issol stands, at an elevation of 131 feet (39^m9), about three-quarters of a cable north-north-westward of the southern extremity of the point.

- Baie de Port Issol, a shallow and rocky cove, lies northward of a
 50 point situated about 1½ cables westward of Tour de Port Issol; a rocky spit, with depths of from 1½ to 4½ fathoms (2^m3 to 7^m8) over it, extends about 1½ cables west-south-westward from the latter point.

Obstruction.—Buoy.—A submerged obstruction is situated about one mile south-south-westward of La Cride beacon. A spherical buoy,

Chart 2819, plan of Baie de Bandol and Baie de Sanary.

painted in white and blue horizontal bands and marked Z D, is moored about a quarter of a cable south-eastward of the obstruction.

Anchorage and fishing are prohibited within a radius of $1\frac{1}{4}$ cables of the submerged obstruction.

Measured distance.—A measured distance of 53,190 feet ($16,212^m4$) or 8.753 miles has been established southward of Baie de La Ciotat; La Cride beacon in line with Tour de Port Issol, bearing 091° , is the leading mark. The western limit is the alignment of the chapel of Sainte Croix with the light-structure on Banc de la Cassidaigne, bearing 359° ; the eastern limit is the alignment of Villa Marie-Rose, a blue house with a red roof, situated north-westward of Château de Bandol, with the western extremity of Île de Bandol, bearing 000° .

This measured distance is divided into two parts by the alignment of the square tower of Villa Bizational (page 95) with the beacon on Canonier du Sud. The western section is 17,015 feet ($5,186^m1$) or 2.8 miles long.

Baie de Sanary. — Light. — Dangers. — Anchorage. — Baie de Sanary is entered between Pointe du Bau Rouge and Pointe Nègre, a dark point about 9 cables south-eastward. The town and harbour of Sanary stand at the northern corner of the bay and close south-westward of the town is the prominent chapel of Notre Dame de Pitie.

A light is exhibited, at an elevation of 27 feet (8^m2), from a masonry tower, 16 feet (4^m9) in height, situated on the head of the southern mole at Port de Sanary (*Lat. $43^\circ 07' N.$, Long. $5^\circ 48' E.$*), about 4 cables east-north-eastward of Pointe du Bau Rouge.

A bank on which the depths are less than 3 fathoms (5^m5) fronts the eastern and south-eastern shores of the bay, extending as much as 3 cables offshore in places.

Baie de Sanary affords good shelter from winds from north-west through north-east to south-east, but westerly or south-westerly winds, if strong, send in a heavy sea. Vessels may obtain good anchorage south-south-westward of the entrance to Port de Sanary, in depths of from $5\frac{1}{2}$ to $6\frac{1}{2}$ fathoms (10^m1 to 11^m9), sand and mud, good holding ground, with La Cride beacon in line with Pointe du Bau Rouge, bearing about 275° , and the chapel of Notre Dame de Pitie bearing about 000° .

Port de Sanary. — Caution.—Port de Sanary is sheltered by two moles which extend south-eastward and south-westward, respectively, from the shore of the bay near its northern corner; these moles were damaged during the recent hostilities and in 1950 were still partly destroyed. The harbour cannot accommodate vessels drawing more than 10 feet (3^m0) and is liable to silting.

A shoal bank of sand and weed surrounds the north-eastern mole and extends south-westward across the harbour entrance towards the head of the south-western mole, leaving a very narrow channel about 27 yards (24^m7) wide. The western extremity of this bank is marked by a black buoy which must be left on the starboard hand when entering the harbour.

Port de la Coudurière. — Depths. — Light. — Port de la Coudurière is a small harbour situated about half a mile south-eastward of Pointe Nègre, which was built for the use of a tile factory, but is open to all craft provided they do not obstruct the factory's vessels. The entrance faces south and the harbour is sheltered from all winds by two moles, the western of which extends about $1\frac{1}{4}$ cables west-south-

Chart 2819, plan of Baie de Bandol and Baie de Sanary.

westward and southward from the coast, about 4 cables east-south-eastward of Pointe Nègre, while the eastern mole extends about half a cable westward from the coast to a similar distance east-north-

5 eastward of the head of the western mole.

The harbour is partly dredged to a depth of 12 feet (3^m7), but dredging has not been maintained and in 1948 there were depths in the entrance of about 10 feet (3^m0), soft mud. Vessels usually moor in the eastern part of the harbour, at a distance of about 16 feet (4^m9)

10 from the face of the quay in front of the factory.

A light is exhibited, at an elevation of 27 feet (8^m2), from a metal column, 21 feet (6^m4) in height, situated on the head of the western mole.

Vessels should approach Port de la Coudurière with La Cride beacon in line astern with Pointe du Deffend, bearing about 300°, until the northernmost of the three factory chimneys is seen in the middle of the harbour entrance, when it should be steered for.

Prohibited anchorage.—Anchoring and trawling are prohibited in an area, indicated by pecked lines on the chart, extending between

20 1½ and 4 cables offshore between Pointe Nègre and the extremity of the western mole at Port de la Coudurière.

Port de la Coudurière to Le Brusq.—**Light.**—Between Port de la Coudurière and the village of Le Brusq, about 1½ miles south-south-westward, the coast is fronted by a bank on which the depths are less

25 than 3 fathoms (5^m5), which extends in places as much as a quarter of a mile offshore; a detached 3-fathom (5^m5) rocky patch lies about 6 cables north-north-westward of Le Brusq and about 3 cables offshore. A jetty projects about half a cable south-westward from the coast at the northern end of Le Brusq village.

30 A light is exhibited, at an elevation of 23 feet (7^m0), from a column situated at the head of Le Brusq jetty (*Lat. 43° 05' N., Long. 5° 48' E.*).

Islands and dangers.—**Light.**—**Beacons.**—A shoal bank, on which are many islands, rocks and dangers, extends about 2 miles west-north-westward from the coast between Le Brusq jetty and a

35 point about half a mile south-westward, where the coast turns east-south-eastward. Île du Grand Rouveau, about 1½ miles westward of Le Brusq jetty and surrounded by rocks, is the outermost island on the bank.

A light is exhibited, at an elevation of 148 feet (45^m1), from a square tower with a white base and dwelling, 58 feet (17^m7) in height, situated on the summit of Île du Grand Rouveau.

Rochers des Magnons are a group of islets and rocks, the highest of which is 26 feet (7^m9) high, situated about a quarter of a mile westward of Île du Grand Rouveau light-structure. Sèches des Magnons, a chain

45 of rocky shoals, extends about 2 cables south-westward from the southernmost islet of Rochers des Magnons. A masonry beacon, 34 feet (10^m4) high, the upper part painted black and the lower part white, surmounted by two cones, points together, stands on Sèches des Magnons, about 4½ cables west-south-westward of Île du Grand

50 Rouveau light-structure; it should be given a berth of at least half a mile by passing vessels.

Basses de la Moulinière are a group of shoal patches lying between 2 and 4 cables west-south-westward of Sèches des Magnons beacon; the shoalest patch has a depth of 5½ fathoms (10^m1) over it. Basse

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 2819, plan of Baie de Bandol and Baie de Sanary.

Renette, a detached 3-fathom (5^m5) patch, lies about 2½ cables northward of Île du Grand Rouveau light-structure.

Île des Embiez lies with Pointe Saint Pierre, its northern extremity, about 6 cables east-north-eastward of Île du Grand Rouveau light-structure; Pointe de Cougousset, its southern extremity and highest point, lies about three-quarters of a mile southward of Pointe Saint Pierre and is 210 feet (64^m0) high. An old château with a tower stands in the middle of the island. The channel between Île des Embiez and Île du Grand Rouveau is obstructed by many rocks of which La Clapassude, 13 feet (4^m0) high, about 1½ cables eastward of the light-structure, and La Cauvelle, 26 feet (7^m9) high, about 1½ cables farther south-eastward, are the most important.

A rocky spit extends about 2½ cables north-north-westward from Pointe Saint Pierre and about half-way along it is Île du Petit Rouveau, 46 feet (14^m0) high. La Casserlane, a detached rocky shoal with a least depth of 7 feet (2^m1) over it, lies about 1½ cables northward of Île du Petit Rouveau. A masonry tower, 35 feet (10^m7) in height, painted black with a broad white horizontal band, and surmounted by two cones, points upwards, stands on La Casserlane.

Île de la Tour Fondue, a small island, 131 feet (39^m9) high, lies close eastward of Île des Embiez to which it is connected. Le Grand Canoguier is a detached patch, with a least depth of 4½ fathoms (8^m2) over it, situated about 2½ cables northward of the northern extremity of Île de la Tour Fondue; a 4½-fathom (8^m7) rocky patch lies about 1½ cables eastward of it. Le Petit Canoguier is a detached rocky patch, with a depth of 3 feet (0^m9) over it, situated about half a cable north-eastward of the northern extremity of Île de la Tour Fondue.

Île du Grand Grau (*Lat. 43° 04' N., Long. 5° 47' E.*) and Île du Petit Grau lie between the south-eastern side of Île des Embiez and the mainland about half a mile south-westward of Le Brusq jetty, leaving shoal and narrow channels between them which are navigable only by small boats with local knowledge.

Rade du Brusq.—Anchorage.—Rade du Brusq lies north-eastward of Île des Embiez, between that island and the bank fronting the coast between La Coudurière and Le Brusq; the holding ground is not good, especially in the northern part of the roadstead where the bottom consists of fine sand, but Rade du Brusq is sheltered from winds from east through south to west-south-west. A good anchorage berth is in depths of from 6 to 7 fathoms (11^m0 to 12^m8), with the northern extremity of Île du Grand Rouveau in line with Pointe Saint Pierre, bearing about 267°, and the summits of Île de la Tour Fondue and Pointe de Cougousset in line, bearing about 219°. Vessels should keep a bridge, situated about 3 cables eastward of Port de Sanary light-structure, open westward of Pointe Nègre.

Directions.—Vessels from southward or south-eastward should approach with the eastern extremity of Viaduc d'Aran (page 97) bearing more than 015° and open westward of La Cride beacon, which leads westward of Basses de la Moulinière. From a position westward of Sèches des Magnons beacon, vessels should shape course for Tour de Port Issol, to avoid Basse Renette. When northward of Île du Grand Rouveau, course may be altered eastward, taking care to avoid La Casserlane, until the tower of the old Château on Île des Embiez bears more than 165° and is open eastward of the eastern extremity of Île

Chart 2819, plan of Baie de Bandol and Baie de Sanary.

du Petit Rousseau, when course may be shaped as requisite for the anchorage.

Chart 2608.

5 Île du Petit Grau to Cap Sicié.—Coast.—Light.—Dangers.—

From the point on the mainland close eastward of Île du Petit Grau, the coast trends east-south-eastward for about $3\frac{1}{4}$ miles to Cap Sicié; it is bold, fronted by rocks and gradually increases in elevation to the bold dark headland of Cap Sicié. Two small peaks with a saddle between
 10 them rise north-westward of the extremity of the cape; the western peak is 1,181 feet (360^m0) high and crowned with the small chapel of Notre Dame de Sicié, about 7 cables west-north-westward of the extremity of the cape. The ruins of Cap Sicié signal station, which it is proposed to re-establish in its former position, are situated on the
 15 eastern peak.

A light is exhibited, at an elevation of 159 feet (48^m5), from a red column, 7 feet (2^m1) in height, situated on Pointe Garde Vieille, a small point projecting south-south-eastward from the foot of Cap Sicié headland.

20 Les Deux Frères, two dark, rugged and pointed rocks, the northern 66 feet (20^m1) and the southern 49 feet (14^m9) high, stand close together about half a mile east-north-eastward of Cap Sicié. A shoal bank extends as much as 2 cables offshore from the coast of the mainland west-north-westward of Les Deux Frères, with depths of $3\frac{1}{2}$ fathoms
 25 (6^m9) over its extremity. The channel between the edge of this bank and Les Deux Frères is about $1\frac{1}{2}$ cables wide, with depths of 8 fathoms (14^m6) in it.

Basse du Cap Sicié, a rocky $2\frac{1}{2}$ -fathom (4^m6) patch, lies about $1\frac{1}{2}$ cables south-eastward of Cap Sicié (*Lat.* 43° 03' N., *Long.* 5° 51' E.),
 30 with depths of 10 fathoms (18^m3) between the patch and the cape.

APPROACHES TO TOULON.—Aspect.—As stated on page 77, a mountain range extends between Montagne de la Sainte Beume at its western end to Mont Coudon at its eastern end. About 5 miles westward of the latter peak, and joined to it by a gentle slope, is the
 35 rounded Montagne des Caumes or des Pomets, 2,612 feet (796^m1) high.

On approaching the coast, vessels may identify the rocky and almost entirely wooded Mont Faron, 1,919 feet (584^m9) high, situated about 3 miles west-south-westward of Mont Coudon; then the dark mass of Cap Sicié; and, farther westward, the bare steep cliffs of
 40 Cap Canaille. Eastward of Mont Coudon, a range inland presents a series of peaks, which, owing to their distance, appear less elevated. Île du Levant, about 20 miles east-south-eastward of Mont Coudon, appears to limit the panorama eastward.

Vessels approaching from westward or south-westward may distinguish the conical hill named Six Fours, situated about $1\frac{1}{2}$ miles eastward of Pointe Nègre, and then Les Deux Frères and Cap Cépet signal station, about 4 miles east-north-eastward of Cap Sicié.

Vessels approaching from eastward may identify Île de Porquerolles with its light-structure and signal station, situated about 15 miles
 50 east-south-eastward of Cap Sicié, then the summit of La Colle Noire, 984 feet (299^m9) high, about $4\frac{1}{2}$ miles south-south-eastward of Mont Coudon, and finally the hill Six Fours, situated about 8 miles west-south-westward of Mont Coudon, with the town and port of Toulon

Charts 2607, 1780, 160, 2158a, 449.

Chart 2608.

about midway between them, *see* views A and B on charts 2607 and 2608.

Currents.—The currents are very weak and irregular in the approach to Toulon and generally follow the direction of the wind; as the winds from seaward have most influence on the sea, west-going currents are more frequent than east-going. They attain their greatest rate near the coast.

Between Cap Sicié and Cap Cépet there is nearly always a westerly current along the coast, sometimes attaining a rate of $1\frac{1}{2}$ knots after 10 bad weather, but it is hardly noticeable at other times.

In Golfe de Giens the west-going current runs along the southern side of the peninsula, turns northward by Pointe Escampobarion, and then skirts the southern and eastern shores of the gulf, turning westward again along the northern shore and decreasing gradually in 15 strength.

Western side of approach. — Dangers. — Beacons. — From Cap Sicié, the coast trends north-eastward for about $2\frac{1}{4}$ miles and thence eastward for about $2\frac{1}{2}$ miles to Cap Cépet. Les Deux Frères and Basse du Cap Sicié are described on page 102. 20

North-eastward of Cap Sicié, the coast decreases in elevation and forms several points of which the most distinctive is Pointe du Bau Rouge, so named from its colour, about $1\frac{1}{4}$ miles north-eastward of Cap Sicié, and which forms the south-western entrance point of the small Anse de Fabregas. 25

Chart 151.

The north-eastern entrance point of Anse de Fabregas is crowned by a battery and fronted by a bank on which the depths are less than 3 fathoms (5^m5), and on which are many rocks, which extends about half a cable offshore. A black and white beacon tower stands close off 30 the point below the battery, about a quarter of a mile north-eastward of Pointe du Bau Rouge.

From the beacon tower, the coast trends north-eastward for about 4 cables to Pointe Marvive and is fronted by a rocky bank on which the depths are less than 3 fathoms (5^m5), which extends as much as 35 $1\frac{1}{2}$ cables offshore. Pointe Marvive is also crowned by a battery and a black and white beacon tower stands on the southern extremity of the point.

Anse des Sablettes. — Light. — Dangers. — Cable beacons. — Anchorage.—Anse des Sablettes is entered between Pointe Marvive 40 and Pointe de Sainte Elme, about three-quarters of a mile eastward. The head of the bay is formed by Isthme des Sablettes, a low neck of land in the middle of which stands a large hotel which is prominent from southward. The small harbour of Port de Sainte Elme, formed by a mole extending about three-quarters of a cable north-westward 45 and northward from the eastern shore of the bay, is entered about $1\frac{1}{2}$ cables north-north-westward of Pointe de Sainte Elme (*Lat.* $43^{\circ} 05' N.$, *Long.* $5^{\circ} 54' E.$). A light is exhibited from the head of the mole at Port de Sainte Elme.

Isthme des Sablettes is fronted by a shoal bank on which the depths 50 are less than 3 fathoms (5^m5), which extends about 2 cables offshore. Le Clapier, a $1\frac{1}{2}$ -fathom (2^m7) rocky patch, lies about a quarter of a mile north-westward, and Sèche de Sainte Elme, a $4\frac{3}{4}$ -fathom (8^m7) rocky patch, lies about $3\frac{1}{2}$ cables south-westward, of Pointe de Sainte Elme. 55

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 151.

Tour de Mourillon (page 107), about $2\frac{3}{4}$ miles north-eastward of Pointe de Sainte Elme, bearing more than 037° and open north-westward of Fort de Sainte Elme, situated about $1\frac{1}{2}$ cables north-eastward of the point of that name, leads north-westward of Sèche de Sainte Elme.

Two beacons, each painted in blue and white horizontal bands and surmounted by a white disc, stand on the beach at Isthme des Sablettes and, when in line bearing 024° , indicate the direction of a submarine telegraph cable. Anchorage is prohibited in the vicinity of this alignment.

Anse des Sablettes affords shelter from winds between north and west, but vessels should always be ready to weigh in case of a change in the weather. The anchorage is in depths of from 8 to 11 fathoms (14^m6 to 20^m1), grey sand and weed and moderately good holding ground; closer inshore, the bottom is of fine sand and less good holding ground. A good anchorage berth is in depths of from 10 to 11 fathoms (18^m3 to 20^m1), with the summit of Six Fours in line with Fort de la Verne on Pointe Marvive, bearing about 313° , and the summit of Cap Gros (chart 2608) in line with the western side of a casino at Plage des Sablettes, bearing about 000° .

Anti-aircraft practice range.—Firing practice is carried out by an anti-aircraft battery situated close within Pointe de Sainte Elme.

Western side of approach (*continued*).—**Dangers.**—**Beacon.**—**25 Anchorage.**—From Pointe de Sainte Elme, the coast trends about three-quarters of a mile south-eastward to Pointe de Marégau and is fronted by a rocky bank extending over one cable offshore in places. A detached one-foot (0^m3) rocky patch lies about one cable south-eastward of Pointe de Marégau and a black and white beacon tower stands on a rock close southward of the point.

From Pointe de Marégau, the coast rises to an elevation of about 328 feet (100^m0) and trends about 7 cables east-north-eastward to Pointe de la Renardière, which consists of distinctive perpendicular cliffs whose strata show slanting yellow stripes on a dark red back-ground. From Pointe de la Renardière, the coast trends eastward and south-eastward for about 8 cables to Pointe Rascas, forming Baie de Cavalas, and is fronted by a rocky bank extending about $1\frac{1}{2}$ cables offshore in places. From Pointe Rascas, the coast trends north-eastward for about $1\frac{1}{2}$ cables to Cap Cépet, the western entrance point of Grande Rade de Toulon.

A shoal patch over which there is a depth of $6\frac{1}{2}$ fathoms (11^m9) lies about 3 cables south-south-westward of Pointe Rascas.

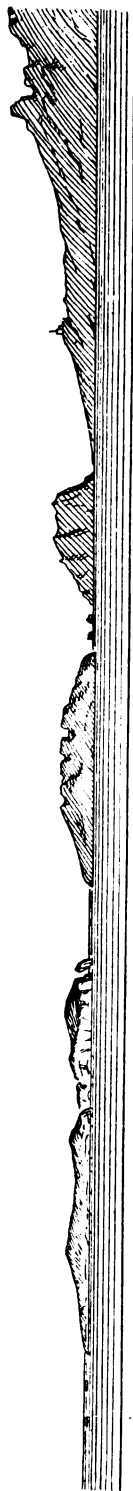
Baie de Cavalas affords shelter from winds from east through north to west-north-west. The anchorage is in depths of from 3 to $3\frac{1}{2}$ fathoms (5^m5 to 6^m4), but the shelter afforded is uncertain and is only suitable for small craft.

Chart 2608.

Eastern side of approach.—**Golfe de Giens.**—**Aspect.**—**Light.**—Golfe de Giens is entered between Pointe Escampobariou (*Lat.* $43^\circ 02' N.$, *Long.* $6^\circ 06' E.$), the south-western extremity of Presqu'île de Giens, situated about 7 miles east-south-eastward of Cap Cépet, and Pointe de Carqueiranne, about $4\frac{3}{4}$ miles north-westward.

Pointe Escampobariou is the extremity of a steep promontory 380 feet (115^m8) high, on which stands a red building. The village of

Charts 2608, 2607, 1780, 160, 2158a, 449.



Ile Calseragnic.

*Ile Jarros,
bearing 290° and open southward
of Les Farillons.*

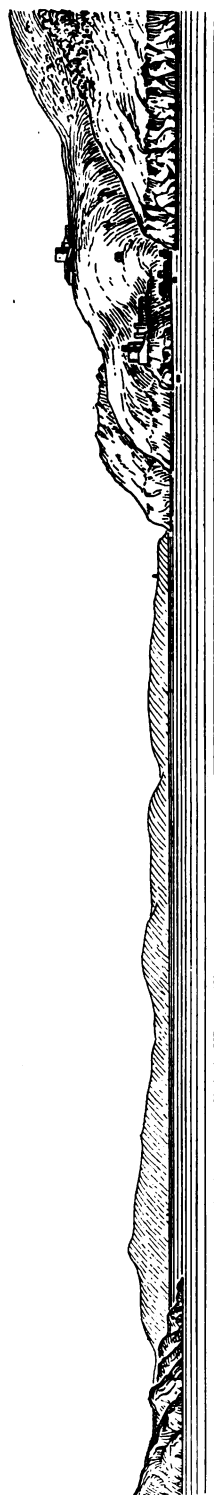
*Les Farillons,
Ile Maïre.*

Cap Croisette signal station.

Passage northward of Ile Jarros, from eastward.

(Original dated 1876.)

To face page 106.



*Pointe de Gueretion.
Ile de Bagau.*

Rade de Port Cros.

*Cap Cameral
lighthouse.
Pointe de Miladon.*

*Passe de Bagau from south-westward
(Original dated 1870.)*

*Château. Fort de l'Estissac.
Pointe de la Pomme d'Or.*

Chart 2608.

Giens, about $1\frac{1}{2}$ miles east-north-eastward of Pointe Escampobariou, is prominent from an offing and the white spire of Giens church in the village, and farther eastward, a chapel with a tower overlooking a sanatorium, may be identified.

The northern side of the gulf is moderately high but decreases in elevation in the middle where there is a valley separating La Colle Noire, 984 feet (299^m9) high and situated about $1\frac{1}{4}$ miles eastward of Pointe de Carqueiranne, from Mont Paradis, a conical regular peak, 968 feet (295^m0) high, about $1\frac{3}{4}$ miles north-eastward. About $1\frac{1}{4}$ miles east-south-eastward of Mont Paradis is Mont des Oiseaux, 1,004 feet (366^m0) high, and at its foot and close to the northern shore of the gulf is the hospital of San Salvadour, a large white building, close eastward of which is a château with a turret. The eastern side of the gulf is formed by Isthme de Giens, a flat and very low isthmus connecting Presqu'île de Giens with the mainland.

Port des Salettes, formed by a small jetty, lies on the northern shore of the gulf at the mouth of the valley between La Colle Noire and Mont Paradis and about $2\frac{1}{4}$ miles eastward of Pointe de Carqueiranne; it is sheltered from westward by a projecting point named Pointe Peno.

A light is exhibited, at an elevation of 25 feet (7^m6), from an iron column 18 feet (5^m5) in height, situated on the head of the jetty at Port des Salettes.

Islets and dangers.—Buoys.—La Grande Fourmigue, 46 feet (14^m0) high, is a rock situated about $1\frac{1}{2}$ miles west-north-westward of Pointe Escampobariou; La Petite Fourmigue, a smaller rock, 26 feet (6^m4) high, lies close westward of La Grande Fourmigue.

A rocky bank extends about 4 cables westward from the north-western extremity of Presqu'île de Giens and fronts the southern shore of the gulf; on this bank lie La Ratonnière, an islet 59 feet (18^m0) high, situated about 3 cables westward of the north-western extremity of Presqu'île de Giens, Île Longue, 92 feet (28^m0) high, about one cable farther eastward, and La Redonne, 36 feet (11^m0) high, about 3 cables eastward of Île Longue.

A shoal bank on which the depths are less than 3 fathoms (5^m5) fronts the eastern shore of the gulf, extending as much as 6 cables offshore. A detached $2\frac{1}{4}$ -fathom (5^m0) patch lies about one mile north-eastward of La Redonne and about three-quarters of a mile offshore.

Several mooring buoys, reserved for the use of French naval vessels, are moored about 8 cables north-north-westward of La Grande Fourmigue.

A target, used in aircraft firing practice, is moored about $1\frac{1}{2}$ miles east-north-eastward of La Redonne (*Lat.* 43° 03' N., *Long.* 6° 06' E.) and close to the eastern shore of Golfe de Giens.

Anchorage.—Prohibited area.—Golfe de Giens affords good shelter during winds from north through east to south. It is exposed to westerly winds but the bottom of mud and weeds is good holding ground. Vessels anchoring in Golfe de Giens must do so in the north-eastern part of the gulf as anchorage is prohibited in the south-western part within an area which is indicated by pecked lines on the chart.

Charts 151, 2608.

GRANDE RADE DE TOULON.—Grande Rade de Toulon is entered between Cap Cépet and Pointe de Carqueiranne, about $3\frac{1}{4}$ miles

Charts 2607, 1780, 160, 2158a, 449.

Charts 151, 2608.

east-north-eastward. Grande Jetée, a breakwater about three-quarters of a mile in length, forms the western side of Grande Rade and separates it from Petite Rade, an inner roadstead, on the northern and eastern shores of which is the town and naval dockyard of Toulon.

Chart 151.

Southern and western sides of Grande Rade.—Signal station.

—**Lights.—Beacons.—Buoys.**—The southern side of Grande Rade is formed by the eastern part of Presqu'île de Saint Mandrier, a peninsula joined to the mainland by Isthme des Sablettes (page 103). Fort de la Croix des Signaux stands on the highest point of the peninsula at an elevation of 426 feet (129^m8), about three-quarters of a mile north-north-westward of Cap Cépet.

Cap Cépet signal station, from which messages can be transmitted through Lloyds, is situated in Fort de la Croix des Signaux.

A light is exhibited, at an elevation of 194 feet (59^m1), from a square tower with a white dwelling about 41 feet (12^m5) in height, situated about one cable westward of Cap Cépet.

From Cap Cépet, the coast trends north-eastward for about 4 cables to Pointe du Canier and is fringed by a rocky bank extending about half a cable offshore. A black and white beacon tower stands on a rock close off Pointe du Canier and a red cylindrical mooring buoy is moored about 2 cables eastward of the point; this buoy is for the use of vessels from the school of mechanician apprentices when engaged in diving practice. Pointe du Puits lies about 1½ cables northward of Pointe du Canier, with La Galette, a rock, awash, about a quarter of a cable farther northward and about the same distance offshore.

About three-quarters of a mile west-north-westward of Pointe des Puits is Aeronautique Navale de Saint Mandrier, an establishment with a coastal frontage extending about half a mile farther westward, with a small basin at its western end. Jetée de Saint Mandrier, partly in ruins, projects about 1½ cables northward from the front of Aeronautique Navale de Saint Mandrier and there are numerous conical buoys both eastward and westward of the jetty, the positions of which can best be seen on the chart.

A light is exhibited, at an elevation of 56 feet (17^m1), from a white iron tower with top part painted black, 42 feet (12^m8) in height, situated on the head of Jetée de Saint Mandrier.

Baie de Saint Mandrier is entered between Jetée de Saint Mandrier and a small jetty extending from Pointe de la Vieille (*Lat. 43° 05' N., Long. 5° 55' E.*), about 5½ cables westward. Anse du Creux Saint Georges, a cove in which the depths are less than 3 fathoms (5^m5), extends southward from the south-western corner of the bay. Two areas, dredged to 15 and 24 feet (4^m6 and 7^m8) and indicated by pecked lines on the chart, lie close off the western end of Aeronautique Navale de Saint Mandrier, and on the western side of Anse du Creux Saint Georges is a wharf with depths alongside and in its approach of 13 feet (4^m0).

Anse du Creux Saint Georges is well sheltered but, being shallow, is suitable only for small craft and is much encumbered by seaplane moorings and buoys.

Grande Jetée, the breakwater forming the western side of Grande Rade, extends about 8 cables southward from the extremity of Presqu'île du Mourillon, a point about one mile north-north-westward

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 151.

of the head of Jetée de Saint Mandrier ; Petite Passe, a gap in Grande Jetée, about a quarter of a cable in width, lies about three-quarters of a cable southward of the root of Grande Jetée.

A light is exhibited, at an elevation of 44 feet (13^m4), from a white tower and dwelling, 30 feet (9^m1) in height, situated on the southern extremity of Grande Jetée. A white beacon stands near the middle of Grande Jetée, about 5 cables northward of the light-structure.

A light is exhibited, at an elevation of 51 feet (15^m5), from a white circular tower, 22 feet (6^m7) in height, situated on a platform in the middle of Petite Passe.

Charts 151, 2608.

Northern side of Grande Rade.—Dangers.—Light.—Torpedo range.—Anchorage.—From Pointe de Carqueiranne, the coast on the northern side of Grande Rade sweeps in a wide curve to Pointe Sainte Marguerite, a steep, grey cliff, 213 feet (64^m4) high, about 1½ miles north-westward, forming Baie de la Garonne. The northern part of this bay affords good shelter from easterly winds over a bottom of mud and weed, good holding ground.

Between Pointe Sainte Marguerite and Cap Brun, a steep reddish point about one mile westward, are Anse Magaud (Magot) and Anse de Mejean, two small coves separated by a point 69 feet (21^m0) high.

Between Cap Brun and Grosse Tour, the south-western extremity of Presqu'île du Mourillon, about 2 miles westward, the coast is fronted by a bank of rocks and weed on which the depths are less than 3 fathoms (5^m5), which extends in places about 1½ cables offshore ; a detached 2½-fathom (4^m6) patch lies about half a mile westward of Cap Brun and about 1½ cables offshore.

Tour du Mourillon, a square seven-storied building, situated in the southern part of the town of Toulon, about 6 cables north-north-eastward of the root of Grande Jetée, is prominent from seaward. On the coast about 2 cables south-eastward of Tour du Mourillon, stands Fort Saint Louis, and close westward of the fort is Port du Mourillon, a small fishing harbour with depths in it of from 3 to 10 feet (0^m9 to 3^m0). The harbour is sheltered by a breakwater extending about three-quarters of a cable south-westward from the western side of Fort Saint Louis.

A light is exhibited from the head of the breakwater at Port du Mourillon (*Lat.* 43° 06' N., *Long.* 5° 56' E.).

A torpedo range extends in a direction 113° for a distance of about 7.6 miles from the south-eastern corner of a platform situated in the middle of Petite Passe. The danger zone extends 300 metres (about 328 yards) on either side of the axis of the line of fire, for a distance of 10,000 metres (about 10,986 yards) from the firing point ; it thence gradually increases to a distance of 800 metres (about 875 yards) on either side of the axis at the extremity of the range. This zone is marked by groups of buoys at intervals of about 5½ cables, one buoy of each group being on the axis of the line of fire and one on either side of it.

During firing practice, a red pendant is displayed at the firing point in Petite Passe, at Cap Cépet signal station and at a flagstaff in Giens village. If the practice is at ranges exceeding 8,000 metres (about 8,750 yards) a red pendant is also displayed at a flagstaff at Pointe de Carqueiranne.

Charts 2608, 2607, 1780, 160, 2158a, 449.

Charts 151, 2608.

The firing of each torpedo is indicated by a blast on a syren and a *white* flare at the firing point; the flare is kept burning until the torpedo has completed its run.

- 5 While the red pendant is displayed at the firing point, all vessels, boats and fishing craft are prohibited from remaining within the limits of the range and the laying of fishing nets or lines is forbidden.

The area fronting the coast between Cap Brun and the root of Grande Jetée is known as Rade des Vignettes and affords good anchorage, 10 sheltered from north-westerly winds, over a bottom of soft mud and weed, good holding ground.

Except in the prohibited areas described below, vessels may obtain anchorage anywhere in Grande Rade, Rade des Vignettes and Baie de la Garonne.

- 15 **Prohibited anchorage.**—Anchorage is prohibited in the following areas which are indicated by pecked lines on the chart:—

- (i) A rectangular area about one cable wide, extending between Cap Brun and the root of Grande Jetée.
- (ii) An area bounded as follows:—On the west, by Grande Jetée 20 and a line joining its southern extremity and Pointe de la Vieille; on the south, by a line joining Pointe de la Vieille and the root of Jetée Saint Mandrier, thence by the north coast of Presqu'île de Saint Mandrier to Rocher La Galette, 25 thence by a line drawn in a 106° direction joining Cépet signal station and Giens church tower; on the north by a line drawn in a 112° direction from Grosse Tour for a distance of 2.4 miles, thence by a line drawn in a 088° direction to the shore in the southern part of Baie de La Garonne, thence by the southern shore of the bay to Pointe de Carqueiranne and 30 thence by a line drawn in a 109° direction for a distance of 3.54 miles; on the east by a line drawn in a 310° direction from Giens church tower for a distance of 1.95 miles.
- (iii) An area bounded by a circle of radius 700 metres (about 2,296 feet), having for centre a point situated 1,968 feet 35 (599m8) 101° from Cap Brun.

Zones and areas reserved for special purposes and practices.—Vessels entering Grande Rade should make themselves acquainted with the following zones and exercising areas:—

- Zone prohibited to submerged submarines.*—Submarines are prohibited 40 from submerging in an area bounded as follows:—On the north by the parallel of the light-structure on the head of Grande Jetée; on the north-east, by that portion of a line drawn 120° from Grosse Tour, contained between the above parallel and the meridian of Fort du Cap Brun; on the east, by the meridian of Cap Brun; on the south, 45 by the parallel 2 miles southward of Pointe Rascas; on the west, by the coast to Pointe Rascas and thence by the meridian of that point.

Submarine diving area.—Except in the prohibited zone described above, submarines are permitted to submerge at any time in the 50 approaches to Toulon. An area in Baie de la Garonne, northward of the parallel of the signal station at Fort de la Croix des Signaux and eastward of the meridian of Cap Brun, is reserved for Submarine diving exercises.

When the signal H P over No. 1 pendant is displayed at the signal

Charts 2607, 1780, 160, 2158a, 449.

Charts 151, 2608.

station at Fort de la Croix des Signaux, navigation in this area is prohibited to all vessels except small fishing boats.

A small lozenge-shaped area, situated about 100° 3 cables from Petite Passe light-structure (*Lat. 43° 06' N., Long. 5° 56' E.*), is reserved for submarines resting on the sea bottom. The area is about one cable long and three-quarters of a cable wide and is marked at each corner by a red buoy.

Anti-aircraft night gunnery practice.—The following signals are displayed when anti-aircraft batteries are carrying out night practices:—
A red rocket is discharged every fifteen minutes from the Croix des Signaux battery while firing is taking place. A red light is exhibited from the flagstaff at Cap Cépet signal station from half an hour before the practice begins until it is completed. Two searchlights are used during the practices.

Aircraft night landing ground.—A night landing ground for aircraft has been established in Grande Rade, the flare path of which is indicated by a pecked line on the chart. The path is marked by seven buoys, painted red and moored in a line about $1\frac{1}{2}$ cables apart in a direction 112° ; the north-westernmost buoy is moored about 6 cables east-south-eastward of the white beacon on Grande Jetée and the south-easternmost buoy, about $10\frac{1}{2}$ cables farther east-south-eastward. A white fixed light is exhibited from each of these buoys when aircraft are operating at night, and at such times, navigation is prohibited within a distance of about $1\frac{1}{2}$ cables on either side of the line of buoys.

Underwater explosions.—Underwater explosions sometimes take place southward of the battery on Pointe de Carqueiranne, in depths of from 22 to 27 fathoms (40^m 2 to 49^m 4), and torpedo explosions sometimes take place in the southern part of Baie de la Garonne.

Chart 151.

Measured distances.—Two measured distances, Base du Mourillon, 6,867 feet ($2,093^m$ 1) long, and Base de la Rade des Vignettes, 6,895 feet ($2,101^m$ 6) long, have been established in Grande Rade.

Base du Mourillon is used to test the speed of small craft and has the following running marks:—For west-going vessels, the alignment of the summit of Six Fours with the northern edge of the platform in Petite Passe, bearing 271° ; for east-going vessels, the alignment of a horizontal step on the northern slope of Mont des Oiseaux, close to the summit, with a white, pyramidal stone beacon, situated on a rocky point on the northern part of the shore of Baie de la Garonne, bearing 091° . In 1950, this beacon was reported to be destroyed.

Base de la Rade des Vignettes is used to test the speed of submarines and has the following running marks:—For west-going vessels, the alignment of the summit of Six Fours with the white beacon on Grande Jetée, bearing 275° ; for east-going vessels, the alignment of the centre of Fort de la Colle Noire with a white beacon on the shore at the head of Baie de la Garonne, bearing 095° .

Both of the measured distances have the same limits. The western limit is the alignment of a mark on a wall, painted white with a red stripe, standing on the coast about $6\frac{1}{2}$ cables west-north-westward of Cap Brun, with a beacon, surmounted by a white topmark, standing on a sunken rock about three-quarters of a cable farther southward. The eastern limit is the alignment of a masonry beacon, painted in red and white, standing on shore at the head of Anse Magaud, with a

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 151.

beacon, surmounted by a white topmark, standing on an above-water rock at the entrance to that cove.

Base du Mourillon is in two sections, the division of the sections being the alignment of a masonry beacon, painted in red and white, standing at the head of Anse de Mejean (*Lat. 43° 06' N., Long. 5° 59' E.*), with a beacon, surmounted by a white topmark, standing on a rock close off the western entrance point of that cove. The length of the western section is 4,642 feet (1,414^m9) and of the eastern section, 10 2,224 feet (677^m9).

In 1950, Base de la Rade des Vignettes was not in use.

PETITE RADE AND PORT DE TOULON.—Entrance to Petite Rade.—Buoy.—Petite Rade is sheltered from easterly winds by Grande Jetée and comprises Baie du Lazaret, Rade de l'Equillette and Baie de la Seyne. The naval dockyard is situated on the northern side of Petite Rade with the commercial harbour eastward of it and the establishments of the École Pyrotechnie on its western side. There is a least depth of 31 feet (9^m4) to within about 1½ cables of the northern part of the eastern shore of Petite Rade and the bottom is of soft mud, but Baie de la Seyne, situated on the western side of this part of Petite Rade, is shallow, with a bottom of mud and weed.

A channel with a least depth of 39 feet (11^m9) has been dredged from the main entrance to Petite Rade to the dry docks on the southern side of the naval dockyard.

Grande Passe, the principal entrance to Petite Rade, lies between the southern extremity of Grande Jetée and the head of the jetty on Pointe de la Vieille, about 2¾ cables south-south-westward, but the southern part of the entrance is obstructed by sunken wrecks.

A red pillar buoy is moored about 1·4 cables south-westward of the southern extremity of Grande Jetée and marks the northern extremity of the obstructions; there is a clear channel with a least depth of 39 feet (11^m9) between this buoy and Grande Jetée, but vessels are advised to give the latter a berth of at least 100 feet (30^m5) as several blocks of masonry have fallen into the sea from the extremity of the jetty.

Small vessels drawing less than 10½ feet (3^m2) can enter Petite Rade through Petite Passe, the gap in Grande Jetée about three-quarters of a cable from its root, passing southward of the torpedo range platform in the middle of the gap.

Pilotage.—Pilotage is compulsory for merchant vessels of over 150 tons entering Petite Rade. Pilots board vessels in Rade des Vignettes.

Baie du Lazaret. — Dangers. — Compass adjustment. — Dangerous area.—Baie du Lazaret, situated at the south-western corner of Petite Rade, is entered between Pointe de la Piastre, about 2 cables west-north-westward of Pointe de la Vieille and Pointe de Balaguier, about 5¾ cables north-north-westward; Fort de Balaguier stands on the latter point. Batterie de Lazaret and Fort de Saint Elme, situated within the south-eastern shore, about 4 cables southward, and 8½ cables south-westward, respectively, of Pointe de la Piastre, are both prominent. On the north-western side of the bay, a small boat harbour and a large white casino at Tamaris, situated about 2½ cables, and 5 cables, respectively, west-south-westward of

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 151.

Pointe de Balaguier, may be identified ; a biological laboratory, with two small stone quays on the shore in front of it, situated about 2 cables farther south-south-westward, may also be distinguished.

Between Pointe de la Piastre (*Lat. 43° 05' N., Long. 5° 55' E.*) and a lazaretto about 3 cables south-westward a jetty about $2\frac{1}{4}$ cables long, with depths alongside of 33 feet (10^m1), extends nearly parallel with the shore of the bay, from a half to three-quarters of a cable from it ; it is reserved for the use of French naval vessels. In 1949, about 280 yards (256^m0) of this jetty was either destroyed or obstructed. There is a small boat basin at the south-western end of the lazaretto.

The head of Baie du Lazaret is filled by a mud bank on which the depths are less than one fathom (1^m8) which extends as much as 4 cables offshore and through which are two dredged channels. Chenal des Sablettes, dredged to a depth of $6\frac{1}{2}$ feet (2^m0) and marked by two rows of stakes, extends along the western shore of the bay between Tamaris and a small basin at the western end of the head of the bay ; in 1950, this channel was impracticable. The other channel, dredged to a depth of 11 feet (3^m4), is about 4 cables long and 66 feet (20^m1) wide and leads through the bank in a 230° direction to a jetty at the head of the bay.

In the northern part of Baie du Lazaret are several mooring buoys for the use of vessels adjusting compasses.

A dangerous area, indicated by pecked lines on the chart and marked at each corner by a black spherical buoy, surmounted by a black triangular topmark inscribed " Danger—Mines," is situated in the southern part of Baie du Lazaret, about $4\frac{1}{2}$ cables westward of Pointe de la Piastre.

Eastern side of Petite Rade. — Danger. — Light-buoy. — Beacon.—The southern part of the eastern side of Petite Rade is fronted by Banc de l'Ane, on which the depths are less than 6 fathoms (11^m0), and which extends as much as $2\frac{1}{2}$ cables offshore. A shoal spit on this bank, with depths of less than 3 fathoms (5^m5) over it, extends about $1\frac{1}{2}$ cables westward of Grosse Tour.

A light-buoy, the upper part painted black and the lower part white, exhibiting a *white group occulting* light, showing *two eclipses every nine seconds*, is moored close off Banc de l'Ane, about $2\frac{1}{4}$ cables west-south-westward of Grosse Tour.

A beacon, consisting of a black cannon on a stone base, surmounted by a white ball, stands about $1\frac{1}{2}$ cables north-westward of Grosse Tour.

Pointe de l'Eguillette. — Danger. — Light-buoy. — Prohibited area.—Pointe de l'Eguillette is situated on the western side of Petite Rade, about $3\frac{3}{4}$ cables northward of Pointe de Balaguier and is crowned with a fort. Basse de l'Eguillette, over which the depths are less than 3 fathoms (5^m5), extends about $1\frac{1}{2}$ cables eastward of the point ; a light-buoy, painted red and surmounted by a cylinder, exhibiting a *red flashing* light showing a *short flash every four seconds*, marks the extremity of Basse de l'Eguillette.

A prohibited area, indicated by pecked lines on the chart, in which there is a de-magnetisation range, extends about 2 cables eastward of Pointe de l'Eguillette. A red can buoy is moored near the south-eastern edge of this area.

Rade de l'Eguillette and Baie de la Seyne.—Dangers.—Buoys.—From Pointe de l'Eguillette, the coast trends in a westerly direction

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 151.

for about $1\frac{1}{2}$ miles to the head of Baie de la Seyne. The area fronting the eastern part of this stretch is called Rade de l'Eguillette and has depths of from 5 to 10 fathoms (9^m1 to 18^m3), soft mud and weed.

5 The southern side of Rade de l'Eguillette is fringed by a bank on which the depths are less than 3 fathoms (5^m5) which extends about one cable offshore. A black conical buoy, surmounted by a cylinder, is moored on the edge of this bank, about 2 cables north-westward of Pointe de l'Eguillette.

10 Baie de la Seyne comprises the shallow part of Petite Rade. On the southern shore of the bay are the shipyard and quays of Compagnie des Forges et Chantiers de la Méditerranée, and the town and port of La Seyne (*Lat.* $43^\circ 06' N.$, *Long.* $5^\circ 53' E.$) are situated at the south-western corner of the bay. A dredged channel leads from Rade de

15 l'Eguillette to the shipyard and to Port de la Seyne; the entrance to this channel is marked on the southern side by a red conical buoy, surmounted by a cylinder, moored about 7 cables west-north-westward of Pointe de l'Eguillette, and on the northern side by a black conical buoy, surmounted by a cone, moored about half a cable northward of

20 the red buoy; within the entrance, the sides of the dredged channel are marked by white buoys. In 1948, there were depths of from 26 to 30 feet (7^m9 to 9^m1) in the channel leading to the shipyard and to Port de la Seyne and from 15 to 23 feet (4^m6 to 7^m0) in a branch channel leading to a cable factory north-westward of Port de la Seyne.

25 **Port de la Seyne.—Lights.—Directions.**—The town of La Seyne, which in 1948 had a population of about 27,000, is the seat of large and important ship-building and repairing yards. Port de la Seyne consists of a basin about $1\frac{1}{4}$ cables long and about half a cable wide. There are depths of 15 feet (4^m6) in the middle of the basin and from
30 8 to 15 feet (2^m4 to 4^m6) alongside the quays.

A light is exhibited, at an elevation of 13 feet (4^m0), from an iron column situated at the head of the north-western jetty at Port de la Seyne.

A light is exhibited on the south-eastern side of the basin entrance
35 at Port de la Seyne.

Vessels approaching Port de la Seyne should keep to the middle of the dredged channel by day, and at night, from the channel entrance, should steer for the light on the head of the north-western jetty.

Northern side of Petite Rade.—Signal tower.—Buoys.—

40 **Reserved area.**—Appontements de Milhaud are six jetties which project southward from the middle of the northern side of Petite Rade, and Appontements de Castigneau are several more jetties farther eastward. All these jetties are reserved for French men-of-war, and in 1949 several of them were obstructed by wrecks. A prominent
45 signal tower with a flagstaff is situated at the eastern end of Appontements de Castigneau, about 1.2 miles north-north-eastward of Pointe de l'Eguillette. Westward of Appontements de Milhaud are the establishments of École de Pyrotechnie, which extend along the northern side of Baie de la Seyne. In front of the school is a small basin in
50 which there are depths of from 5 to 8 feet (1^m5 to 2^m4); the channel leading to this basin is marked by red and black buoys.

Three red buoys in the northern part of Baie de la Seyne mark the southern limit of an area reserved for the École de Pyrotechnie. About 2 cables within the southern limit of this area, four red buoys in a

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 151.

quadrilateral, with a red conical buoy in the centre, mark an area where exercises with explosives are carried out. A boat displaying a red flag will indicate when an explosion is about to take place in this area, and all vessels and boats are prohibited from approaching the vicinity 5 while the red flag is flying.

Mooring buoys. — Prohibited anchorage. — Anchorage. — A number of mooring and warping buoys are moored in Petite Rade ; they are normally reserved for men-of-war and merchant vessels are not permitted to secure to one of these buoys without having previously 10 obtained permission from the Préfet Maritime.

Six seaplane mooring buoys, painted white, are moored between one and 2 cables westward of the westernmost jetty of Appontements de Milhaud (*Lat. 43° 07' N., Long. 5° 54' E.*).

Anchorage is prohibited within an area indicated by pecked lines on 15 the chart, westward and southward of Grande Jetée ; farther northward, in Baie de la Seyne and off the military port of Toulon ; these latter areas are also indicated by pecked lines on the chart.

Vessels are also prohibited from anchoring within 250 metres (about 820 feet) of any mooring buoy and within 50 metres (about 164 feet) 20 of any military establishment, wharf, quay or jetty.

Vessels may normally obtain anchorage anywhere in Petite Rade outside the prohibited areas indicated above, but in 1949, the authorised anchorage in Petite Rade was confined to a triangular area bounded by lines joining (1) a point situated 4.05 cables 278° from the black 25 beacon on Banc de l'Ane, (2) the south-eastern extremity of No. 4 jetty of Appontements de Milhaud and (3) the southern extremity of the eastern side of Passe de Castigneau, situated about three-quarters of a mile east-north-eastward of (2).

Tankers should secure under a transporter between Pointe de 30 l'Eguillette and the shipyard at Port de la Seyne, in depths of 23 feet (7^m0). Two mooring buoys are established there for the purpose of hauling off.

Port de Toulon. — Caution. — Lights. — Depths. — Port de Toulon comprises the military port or arsenal, and the commercial harbour. 35 Darse Vieille (Old basin), while forming part of the military port, is available for the use of merchant ships.

The military port is reserved for the use of French men-of-war, and consists of Darse de Missiessy, Darse de Castigneau, and Darse Neuve 40 (New basin), all situated on the northern side of Petite Rade eastward of Appontements de Milhaud, Darse Vieille, at the north-eastern corner of Petite Rade, and Darse du Mourillon, the latter situated on the eastern side of Petite Rade, between Darse Vieille and Grosse Tour.

Leading lights have been established for entering Darse Missiessy. The front light is exhibited at an elevation of 47 feet (14^m3), from a 45 column 38 feet (11^m6) in height, situated on the north-western side of Darse Missiessy about 2½ cables northward of the entrance ; the rear light is exhibited, at an elevation of 68 feet (20^m7), from the top of a reservoir 65 feet (19^m8) in height, situated about half a cable northward of the front light. These lights in line, bearing 352°, lead from 50 Petite Rade through the entrance to Darse Missiessy.

The military port was considerably damaged during the recent hostilities and in 1949 there were still numerous wrecks and obstructions in the basins and docks.

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Chart 151.

Port de la Rode, the former commercial harbour, is situated north-eastward of Darse du Mourillon and was entered from that basin, but in 1950 work was in progress filling it in and entrance was prohibited
5 to all vessels.

In 1948, there was a depth of about 30 feet (9^m1) in the entrance to Darse de Missiessy and of 33 feet (10^m1) within that basin and in Darse de Castigneau. There was a depth of 33 feet (10^m1) in the entrance to Darse Neuve and depths of from 33 to 42 feet (10^m1 to 12^m8) in that
10 basin, except in the north-eastern part which is shoal in places. There were depths of from 20 to 31 feet (6^m1 to 9^m4) in Darse Vieille, except on the eastern side which is shoal in places.

Darse Vieille is lined with quays. The western part of the northern quay is normally reserved for fishing vessels and yachts, and the east
15 and west quays, for small naval vessels, but in 1949 all the quays were either destroyed or obstructed by wrecks, except for a length of about 260 feet (79^m2) which was available for light-draught vessels.

The entrance to Darse du Mourillon, the new commercial harbour, lies about 1½ cables south-eastward of the entrance to Darse Vieille,
20 and the entrance and the northern part of the former basin, up to and including the entrance to Port de la Rode, is dredged to a depth of 26 feet (7^m9).

A light is exhibited, at an elevation of 16 feet (4^m9), from an iron post, 4 feet (1^m2) in height, situated on the western side of the entrance
25 to Darse Vieille, about 9½ cables northward of Grosse Tour (*Lat.* 43° 06' N., *Long.* 5° 56' E.).

A light is exhibited, at an elevation of 19 feet (5^m8), from an iron column situated on the eastern side of the entrance to Darse Vieille.

30 A light is exhibited, at an elevation of 26 feet (7^m9), from a black pylon 23 feet (7^m0) in height, situated on the northern side of the entrance to Darse du Mourillon.

A light is exhibited, at an elevation of 26 feet (7^m9), from a red pylon, 23 feet (7^m0) in height, situated on the southern side of the entrance to
35 Darse du Mourillon.

Town.—Port facilities.—Communications.—Toulon, the largest French military port in the Mediterranean, is at the same time an active commercial port. The Préfect Maritime, who is an admiral, is the supreme port authority.

40 In 1948, Toulon had a population of about 135,000.

There is a civil and a nautical hospital in Toulon.

Stocks of coal, fuel oil and Diesel oil are maintained. Fresh provisions and supplies of all kinds are plentiful. Fresh water is laid on to the quays and can be supplied to vessels in the harbour by water
45 boats.

All repairs can be undertaken by the shipyard at Port de la Seyne.

There are thirteen dry docks in the naval dockyard and a floating dock at Port de la Seyne. In 1947, five of the dry docks were out of
50 action owing to damage sustained during hostilities. For dimensions of the largest dock, *see* Appendix I, page 519.

There is regular sea communication with all parts of the world.

Deratisation.—Deratisation can be carried out at Toulon, *see* page 18.

Charts 2608, 2607, 1780, 160, 2158a, 449.

Chart 2608.

COAST.—Southern coast of Presqu'île de Giens.—Beacon.—Anchorage.—Buoy.—Islands and Dangers.—Lights.—From Point Escampobariou, the southern coast of Presqu'île de Giens trends about $3\frac{1}{2}$ miles eastward to Cap de l'Esterel, its eastern extremity. 5
About 6 cables eastward of Pointe Escampobariou is a group of rocks which extend about 2 cables offshore, and about the same distance north-eastward of the point is a beacon, painted in black and white.

Baie du Niel is entered between Pointe des Morts, situated about $1\frac{1}{2}$ miles eastward of Pointe Escampobariou, and Pointe Madame, about 6 cables farther eastward; the eastern side of the bay is fringed by rocks which extend about three-quarters of a mile offshore. At the north-western corner of the bay is Port du Niel, a small harbour sheltered by a jetty projecting eastward from the western shore of the bay near the head. The jetty and a former light-structure on it were destroyed in the recent hostilities, but in 1949 an alignment of two lights indicated an entrance channel by which vessels of a draught of less than 13 feet (4^m0) could enter and obtain shelter between the ruins of the jetty and the head of the harbour. 10 15

Small vessels may obtain anchorage, in depths of from $5\frac{1}{2}$ to 7 fathoms (10^m1 to 12^m8), about $1\frac{1}{2}$ cables north-eastward of Pointe des Morts. 20

From Pointe Madame, the coast trends south-eastward for about half a mile to Pointe de Terre Rouge and thence trends eastward for about 2 cables to Pointe de la Tour Fondue, a projecting point, crowned by an old fort close to which is a village. From this latter point, the coast trends east-north-eastward for about 9 cables to Cap de l'Esterel, a point terminating in Îlot de l'Esterel, a rock, 27 feet (8^m2) high. A $2\frac{3}{4}$ -fathom (5^m0) rocky patch lies about one cable offshore midway between Pointe Madame and Pointe de Terre Rouge. 30

A light is exhibited from a metal pylon situated at the extremity of Pointe de la Tour Fondue, and a white buoy is moored about a quarter of a mile south-eastward of the same point.

Anchorage is prohibited in the area fronting the coast eastward of Pointe de Terre Rouge, *see* page 118. 35

A shoal bank extends about three-quarters of a mile south-south-westward from Pointe de Terre Rouge and on its outer part is Île du Grand Ribaud, 167 feet (50^m9) high, with a château on its summit. Sèche de Ribaud, a rock with a depth of 5 feet (1^m5) over it, lies about half a cable southward of the southern extremity of the island. Île du Petit Ribaud, a rocky islet, 59 feet (18^m0) high, lies about midway between Île du Grand Ribaud and the coast of the mainland, with La Ribaudon, a rock, 20 feet (6^m1) high, close northward of the islet. 40 45

A light is exhibited, at an elevation of 74 feet (24^m1), from a post on a concrete base, situated near the southern point of Île du Grand Ribaud (*Lat.* $43^\circ 01' N.$, *Long.* $6^\circ 08' E.$).

In calm weather, small vessels of a draught of less than 15 feet (4^m6) may use the passage between Île du Grand Ribaud and Île du Petit Ribaud. The deepest water is found nearer Île du Petit Ribaud, and the extremity of Pointe Escampobariou bearing 278° and in line with Notre Dame de Sicié (page 102) leads through the fairway, but the latter object can only be seen in very clear weather. 50

Charts 2607, 1780, 160, 2158a, 449.

*Chart 2607.***ÎLES D'HYÈRES.—General remarks.—Aspect.—Current.—**

Îles d'Hyères consist of Île de Porquerolles, Île de Bagau, Île de Port Cros and Île du Levant, a chain of four islands which extend across the entrance to Rade d'Hyères from about $1\frac{1}{2}$ miles southward of Cap de l'Esterel for about 15 miles eastward. Vessels from westward or southward may enter Rade d'Hyères either by Petite Passe, a channel about one mile wide between Île du Grand Ribaud and Île de Porquerolles, or by Grande Passe, the channel between Île de Porquerolles and Île de Port Cros, which is about 5 miles in width. Vessels from eastward enter Rade d'Hyères through Passe Est, a channel about 5 miles wide between Île du Levant and Cap Bénat, the eastern entrance point of the roadstead.

Vessels approaching from seaward will first sight a range of mountains northward, from which, on a closer approach, the islands appear to detach themselves. When about 12 miles southward of Îles d'Hyères, Cap Sicié, which bounds the view westward, Mont Coudon, Mont Faron, and Île de Porquerolles may be identified, the latter by the light-structure on its southern extremity and by a signal station on its highest point. Îles de Bagau, de Port Cros and du Levant appear as one island. Cap Camarat, about $11\frac{1}{2}$ miles north-eastward of Île du Levant, and the ranges of Monts des Maures and de l'Esterel, may be identified with difficulty.

During foggy weather, vessels equipped with a radio direction finder may find the radiobeacon at Cap d'Armes on Île de Porquerolles of assistance. If from westward, vessels should guard against mistaking Presqu'île de Giens for Île de Porquerolles and should not attempt to enter Petite Passe until the land on both sides of this channel has been identified. If from eastward, vessels should keep in depths of more than 28 fathoms (51^m2) and should take care to avoid l'Esquillade, a rock situated about one mile eastward of Île du Levant (page 120).

Seaward of Îles d'Hyères, the current usually sets westward, but is only noticeable during easterly winds.

35 Chart 2608.

Île de Porquerolles. — Light. — Radiobeacon. — Signal station.—Île de Porquerolles lies with Pointe Sainte Anne, its western extremity, about $1\frac{1}{4}$ miles south-eastward of Île du Grand Ribaud light-structure. The island is about 4 miles long in an east and west direction; its southern coast is cliffy and in the middle of it is Cap d'Armes (*Lat.* $42^{\circ} 59' N.$, *Long.* $6^{\circ} 12' E.$), the southern extremity of the island.

A light is exhibited, at an elevation of 262 feet (79^m9), from a white square tower and dwelling, 58 feet (16^m2) in height, situated about $3\frac{1}{2}$ cables eastward of the extremity of Cap d'Armes. A radiobeacon transmits from the light-structure.

A signal station is situated, at an elevation of 476 feet (145^m1) on the highest point of the island, about $1\frac{1}{2}$ miles north-eastward of Cap d'Armes.

50 Baie de Langoustier.—Island and dangers.—Light.—Anchor-age.—Pointe Sainte Anne is the north-western extremity of Presqu'île du Grand Langoustier, a peninsula joined to Île de Porquerolles by a narrow neck. Île du Petit Langoustier lies with its southern extremity about one cable northward of Pointe Sainte Anne, whence it extends

Charts 2607, 1780, 160, 2158a, 449.

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about 3 cables farther northward ; a fort with a circular tower stands on the northern part of the island. Écueils de la Jaune Garde lie about one cable northward of Île du Petit Langoustier.

A light is exhibited, at an elevation of 53 feet (16^m2), from a black circular tower with a broad white horizontal band, 52 feet (15^m8) in height, situated on Écueils de la Jaune Garde ; rocks extend about half a cable northward, and a detached rock lies about one cable eastward of the light-structure.

Baie de Langoustier is entered between Écueils de la Jaune Garde and Pointe Rousset, the northern extremity of an islet close off the coast about half a mile eastward. Vessels may obtain anchorage in the bay, in depths of from 23 to 26 feet (7^m0 to 7^m9), weed and good holding ground, but the bay is exposed to northerly winds. Vessels should moor and should secure the stern to the shore with hawsers. For prohibited anchorage area, *see* page 118.

Petite Passe.—Directions.—Petite Passe has a clear width of about three-quarters of a mile between Sèche de Ribaud and the rocks extending close northward of Écueils de la Jaune Garde. At night, vessels from westward should approach on a bearing of Cap d'Armes light until the lights at Île du Grand Ribaud and Cap Bénat (page 123) have been identified, when they should shape course to pass midway between the light on Île du Grand Ribaud and that on Écueils de la Jaune Garde. Should the latter light be not easily distinguished, vessels may enter Petite Passe keeping Cap Bénat light bearing 063°.

Northern side of Île de Porquerolles.—Light.—Buoys.—Anchorage.—The northern side of Île de Porquerolles is low and is fronted by a bank on which the depths are less than 3 fathoms (5^m5) which, in places, extends as much as a quarter of a mile offshore.

From Pointe Rousset, the coast trends eastward for about 6 cables to Pointe de Bon Renaud, on which stands an old battery. Rade de Porquerolles is entered between Pointe de Bon Renaud and Pointe Le Quin, about 1½ miles east-north-eastward, and although open northward to Rade d'Hyères, is practically sheltered from all winds. At the head of the bay stand the village and château of Porquerolles ; a small jetty projects west-north-westward from the north-western side of the village, forming Port de Porquerolles (*Lat.* 43° 00' N., *Long.* 6° 12' E.), where only northerly winds send in a little swell.

A light is exhibited, at an elevation of 27 feet (8^m2), from a column on a white wooden hut, 19 feet (5^m8) in height, situated on the head of the jetty.

Two black, cylindrical mooring buoys are moored about a quarter of a mile northward, and 1½ cables north-north-eastward, respectively, of the head of the jetty ; these buoys are reserved for vessels of a maximum of 1,500 tons. Two white conical buoys for the use of Government craft are moored about one cable west-south-westward, and a similar distance south-westward, respectively, of the head of the jetty.

Vessels may obtain anchorage in Rade de Porquerolles but they are liable to drag if anchored far offshore, especially with winds from east-north-eastward through north to north-west. A good berth is in depths of 5½ fathoms (10^m1), about 4 cables northward of the head of the jetty, with Pointe Rousset in line with Pointe de Bon Renaud, bearing about 271°. Anchorage may also be obtained, in depths of 23 feet (7^m0), with the southern extremity of Île du Grand Ribaud in line

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with Pointe de Bon Renaud, bearing about 282° , and the church tower in Porquerolles village, in line with the root of the jetty, bearing about 155° . With northerly winds, it is advisable to moor.

- 5 Vessels drawing 10 feet (3^m0) can secure alongside the jetty for a length of about 100 feet (30^m5) from its head. When entering the port, they should pass the head of the jetty at a distance of from 40 to 85 feet (12^m2 to 25^m9) in order to avoid the foundations of the jetty on the one hand, and a shoal with depths of 9 feet (2^m7) over it, 10 situated south-westward of the jetty head, on the other hand. Small craft drawing less than 7 feet (2^m1) can secure bow or stern to the end of a pontoon situated in the eastern part of the port, southward of the root of the jetty.

- The village of Porquerolles was partially destroyed during the 15 recent hostilities. Supplies of all kinds are scanty; fresh water is scarce and is obtained from a spring in the village in front of the church.

- Baie d'Alicastre is entered between Pointe Le Quin and Cap des Mèdes, the north-eastern extremity of the island, about $1\frac{1}{2}$ miles 20 north-eastward; the ancient fort of Alicastre, situated about a quarter of a mile eastward of Pointe Le Quin, is a prominent landmark. For prohibited anchorage, *see* below.

- Rochers des Mèdes extend about $1\frac{1}{4}$ cables northward from Cap des Mèdes; the northernmost and highest of these rocks is distinctive in 25 having two pointed peaks, one of which resembles an eagle's beak, and by a hole which pierces it right through.

Eastern side of Île de Porquerolles.—Off-lying islets.—

- Beacon.—Buoy.**—From Cap des Mèdes, the east coast of Île de Porquerolles trends southward for about $1\frac{3}{4}$ miles to the south-eastern 30 extremity of the island. Gros Sarranier and Petit Sarranier are two rocky islets, lying about half a cable, and $3\frac{3}{4}$ cables, respectively, east-south-eastward of the south-eastern extremity of Île de Porquerolles; a black beacon stands on the latter islet. Depths of $2\frac{3}{4}$ and $1\frac{1}{2}$ fathoms (5^m0 and 2^m7) are charted in the passage between Gros and Petit 35 Sarranier.

A buoy is moored about half a mile east-north-eastward of Petit Sarranier.

- Prohibited anchorages.**—Owing to the existence of Submarine telegraph cables, anchorage is prohibited in the following areas which 40 are indicated by pecked lines on the chart:—

Petite Passe.—South-eastward of Île du Grand Ribaud and Cap de l'Esterel and between them and Île de Porquerolles.

- Baie d'Alicastre.*—On the west, by the prolongation of a line drawn in a direction 201° joining Cap d'Armes light-structure and the ancient 45 battery of Alicastre; on the south and east, by the coast of Île de Porquerolles; on the north, by the arc of a circle of half a mile radius, having for centre Cap des Mèdes (*Lat.* $43^{\circ} 02' N.$, *Long.* $6^{\circ} 15' E.$) and joining the northern boundary of the prohibited area in Grande Passe.

- 50 *Grande Passe.*—An area consisting of a belt half a mile wide, whose southern boundary is a line joining Cap des Mèdes and Pointe du Beau, the northern extremity of Île de Bagau.

Île de Bagau.—Passe de Bagau.—Current.—Île de Bagau, 167 feet (50^m4) high, is separated from Île de Porquerolles by Grande

Chart 2608.

Passe which is clear of dangers eastward of Petit Sarranier. Sèche des Sarraniers, a rocky bank with a least depth of 11 fathoms (20^m1) over it, lies about 1½ miles east-south-eastward of Petit Sarranier.

Pointe de Gueretion, the southern extremity of Île de Bagau and the western entrance point of Passe de Bagau, the strait separating the island from Île de Port Cros, lies about 5 miles eastward of the south-eastern extremity of Île de Porquerolles. Both Pointe de Gueretion and Pointe du Beau, the north-eastern extremity of the island, about 8 cables farther northward, are fronted by rocks extending about three-quarters of a cable offshore.

Passe de Bagau is entered between Pointe de Gueretion and Pointe de la Malalongue, the south-western extremity of Île de Port Cros, about 2¼ cables south-eastward but the rocks fringing both entrance points reduce the navigable width of the entrance to about 1¼ cables; about half a mile within the entrance, the strait opens out to about three-quarters of a mile in width and is known as Rade de Port Cros. See view facing page 105.

In 1948, Passe de Bagau was navigable only by vessels not exceeding 16 feet (4^m9) in draught.

The current in Passe de Bagau usually sets south-westward at a rate of about one knot.

Île de Port Cros.—Baie de Port Cros.—Buoy.—Anchorage.—Île de Port Cros, 679 feet (207^m0) high and the highest of Îles d'Hyères, extends east-north-eastward for about 2¼ miles between Pointe de la Malalongue and Pointe de Port Man, its eastern extremity. Pointe du Vallon, its southern extremity, lies about 1½ miles east-south-eastward of Pointe de la Malalongue and about a quarter of a mile farther southward is Îlot de la Gabinière, 207 feet (63^m1) high, which is nearly steep-to.

From Pointe de la Malalongue, the western coast of the island forms the eastern side of Passe de Bagau and trends north-eastward for about half a mile to Pointe de la Pomme d'Or. Baie de Port Cros, a small bay with a village at its head, is entered between Pointe de la Pomme d'Or and Pointe du Moulin, a point crowned by a fortified château about 2 cables north-eastward. A small mole projects southward from the northern shore of the bay near the head.

Baie de Port Cros is sheltered from westward and although exposed to northerly, north-westerly and south-westerly winds, the sea is never high but the last-named wind sends in a swell; the holding ground is good.

A red mooring buoy is moored in a depth of about 20 feet (6^m1) at the entrance to the bay; small craft anchor and secure their sterns to the buoy. Larger vessels can obtain anchorage in Rade de Port Cros, in depths of from 11 to 14 fathoms (20^m1 to 25^m6), mud and weed, in the middle of the roadstead, westward of the château on Pointe du Moulin (Lat. 43° 01' N., Long. 6° 23' E.).

From Pointe du Moulin the coast trends north-eastward for about a quarter of a mile to Pointe de Miladou and thence east-north-eastward for about 1½ miles to Pointe de la Galère, the northern extremity of the island. Between Pointe de la Galère and Pointe de Port Man, a point situated about 6 cables south-eastward, on which is a ruined fort with a high tower, is Anse de Port Man, a bay which is open north-north-eastward. Although this bay is sheltered from north-westward,

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anchorage in it and off the whole north coast of Île de Port Cros is prohibited, *see* page 121.

Passe des Grottes.—**Danger.**—**Beacon.**—Passe des Grottes, the
5 strait separating Île de Port Cros from Île du Levant, has depths of from 8 to 22 fathoms (14^m6 to 40^m2) in the fairway ; it is about half a mile wide and its shores are steep-to on either side.

A detached shoal, with a least depth of 8 feet (2^m4) over it, lies on the western side of the strait, about 4 cables southward of Pointe de
10 Port Man and about 1½ cables offshore. It is marked by Tourelle de la Dame, a circular tower, the upper part painted red and the lower part white, surmounted by two cones, bases together, 36 feet (11^m0) in height. Vessels passing through Passe des Grottes should keep on the eastern side of the strait.

15 Chart 2607.

Île du Levant. — **Light.** — **Off-lying danger.** — **Beacon.** —
Île du Levant lies with Cap Maupertuis, its south-western extremity, about one mile south-eastward of Pointe de Port Man, and the island extends about 4½ miles north-eastward to Pointe du Titan, its eastern
20 extremity.

From Cap Maupertuis, the western coast of the island trends northward for about 1½ miles to Cap Laisset ; about a quarter of a mile southward of the latter cape, the prominent ruins of Fort de l'Arbousier stand at an elevation of 377 feet (114^m9), and about 9 cables farther
25 eastward is an old penitentiary, which also is prominent. From Cap Laisset, the coast trends north-eastward for about 2½ miles to Pointe du Castelas and thence eastward for about 1½ miles to Pointe de Calerousse, the northern extremity of the island. Pointe du Titan lies about 4 cables southward of Pointe de Calerousse, and at a distance
30 of about a quarter of a mile west-north-westward of the former point the land rises to a peak 364 feet (110^m9) high, on which stands a dis-used signal station. Le Grand Cap, situated about 1½ miles north-eastward of Cap Maupertuis, is the most prominent projection on the south-eastern coast of the island.

35 A light is exhibited, at an elevation of 230 feet (70^m1), from a white circular stone tower and dwelling, with a square tower, 23 feet (7^m0) in height, situated on Pointe du Titan.

L'Esquillade, a low rock, lies about one mile eastward of Pointe du Titan ; a circular masonry tower, painted in red and black horizontal
40 bands, 37 feet (11^m3) in height and surmounted by a globe stands on l'Esquillade. The rock is steep-to on its eastern side, but a 4-foot (1^m2) rocky patch lies about one cable west-south-westward of it.

L'Esquilladon (*Lat.* 43° 03' N., *Long.* 6° 31' E.), a small above-water rock, lies about 1½ cables eastward of Pointe du Titan and depths of
45 less than 3 fathoms (5^m5) extend about half a cable north-eastward of it. There are general depths of from 14 to 23 fathoms (25^m6 to 42^m1) in the passage between L'Esquilladon and L'Esquillade.

Sèche du Titan, a pinnacle rock with a depth of 7 fathoms (12^m8) over it, lies about 1½ miles south-westward of Pointe du Titan and
50 about 4 cables offshore.

Offshore depths.—Banc du Magaud, on which the depths vary between 40 and 60 fathoms (73^m2 and 109^m7), is the outer part of a tongue of the shore bank fronting Îles d'Hyères, which extends as much as 7½ miles eastward of Pointe du Titan.

Charts 1780, 160, 2158a, 449.

Chart 2607.

Prohibited anchorage.—On account of submarine cables, anchorage is prohibited north-westward of Île de Bagau, Île de Port Cros and the western part of Île du Levant in an area extending to the mainland, which is limited as follows :—On the north, by the coast between Cap de Brégançon and Cap Bénat light-structure (page 123) ; on the west, by a line joining Cap de Brégançon and Pointe du Beau ; on the south, by a line joining Pointe du Beau and Pointe du Moulin, thence by the north coast of Île de Port Cros to Pointe de Port Man, thence by a line joining Pointe de Port Man and the ancient fort of Arbousier, thence by the north coast of Île du Levant to Pointe du Guier, situated about one mile south-westward of Pointe du Castelas ; and on the east, by a line joining Pointe du Guier and Cap Bénat light-structure.

Chart 2608.

RADE D'HYÈRES. — Western side. — Anchorage. — Rade d'Hyères is entered between Cap de l'Esterel (page 115) and Cap Bénat, about 9 miles east-north-eastward. It is sheltered seaward by Îles d'Hyères, and the bottom of mud and weed is moderately good holding ground.

From Cap de l'Esterel, the western side of Rade d'Hyères trends westward for about one mile whence it decreases in elevation to a low beach which stretches northward for about 3 miles to La Plage d'Hyères, and thence trends about $2\frac{1}{2}$ miles north-eastward to Port Pothuau. The whole of this stretch of coast is fringed by a bank of weed which, with depths of less than 3 fathoms (5^m5), extends as much as 4 cables offshore in places.

For about $1\frac{1}{2}$ miles from its southern end, the low beach separates Étang des Pesquiers from the sea ; the northern part of this lagoon consists of a wide expanse of salt marshes which are connected with the sea by a canal, the mouth of which is situated about $2\frac{1}{4}$ miles north-north-westward of Cap de l'Esterel and which is available to boats drawing 3 feet (0^m9). Close northward of the mouth of the canal is a small pier alongside which lighters can load, and about half a mile eastward of the pier are some mooring buoys for the use of these lighters. Les Pesquiers chapel stands close northward of the canal, near its mouth.

The area fronting the beach between Cap de l'Esterel and Les Pesquiers chapel is known as Rade de la Badine and affords anchorage northward of Cap de l'Esterel in depths of $6\frac{1}{2}$ fathoms (11^m9), mud and weed, sheltered from westerly and south-westerly winds.

About $1\frac{1}{4}$ miles northward of Les Pesquiers chapel is La Plage d'Hyères, abreast which is a small wooden pier ; about 2 cables farther southward is a pier belonging to the French naval air service. There are several moorings for seaplanes southward and eastward of the latter pier.

The north-western shore of Rade d'Hyères is overlooked by Collines d'Hyères, a range of hills on the southernmost of which, about 2 miles north-north-westward of Les Pesquiers chapel, stands the chapel of Notre Dame d'Hyères (*Lat. $43^{\circ} 06' N.$, Long. $6^{\circ} 08' E.$*). About $1\frac{1}{2}$ miles northward of Notre Dame d'Hyères is the town of Hyères, situated in an amphitheatre at the foot of a black mountain on which stand the ruins of a fortress. About $1\frac{1}{4}$ miles north-westward of the town is Mont Fenouillet, 961 feet (292^m9) high and surmounted by a distinctive rock.

Charts 2607, 1780, 160, 2158a, 449.

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About 2 miles north-eastward of La Plage d'Hyères is the mouth of the Gapeau, north-eastward of which is Plage des Salins, a beach which extends about three-quarters of a mile farther north-eastward to Port

5 Pothuau with several heaps of salt and storehouses close within it. **Aircraft practice range.**—A target, consisting of a conical buoy surmounted by a red flag, is moored about $1\frac{1}{2}$ miles north-north-westward of Cap de l'Esterel. Aircraft carry out firing practice at this target without previous warning, *see* page 124.

10 **Rade des Salins.**—**Anchorage.**—Rade des Salins, the area southward and south-eastward of Port Pothuau, affords anchorage with good holding ground during all except south-easterly winds. There is a mooring buoy at the anchorage which is reserved for French naval vessels. An iron pier projecting from the shore between the

15 mouth of the Gapeau and Port Pothuau, is mainly reserved for the use of French naval vessels. **Port Pothuau.**—**Lights.**—**Regulations.**—The village of Les Salins d'Hyères lies about 3 miles eastward of the town of Hyères and the harbour of Port Pothuau is situated in front of the village. The

20 harbour is protected by two jetties, each about three-quarters of a cable long, which leave an entrance about 200 feet (61^m0) wide. In 1949, both the harbour and the entrance were dredged to a depth of 13 feet (4^m0).

A light is exhibited at an elevation of 38 feet (11^m6), from a column

25 34 feet (10^m4) in height, situated on the head of the eastern jetty. A light is exhibited, at an elevation of 16 feet (4^m9), from a wooden

post, situated on the head of the western jetty.

Port Pothuau is under the jurisdiction of the French naval authorities and the harbour is reserved for the use of French naval vessels,

30 except as follows :—
(i) Lighters and boats belonging to Compagnie des Salins, whose canal adjoins the harbour, have free access to the harbour on condition that they do not impede the services of French naval vessels.

35 (ii) Merchant and fishing vessels of less than 10 tons have free access to Canal des Salins, but can only remain in Port Pothuau on condition that their presence does not impede the movements of French naval vessels.

(iii) Vessels exceeding 10 tons may be assigned a berth in Port

40 Pothuau on condition that their presence will not impede the entry, exit or movements of French naval vessels.

Northern side of Rade d'Hyères.—**Lights.**—**Anchorage.**—**Buoys.**—**Beacons.**—From Port Pothuau (*Lat.* 43° 07' N., *Long.* 6° 12' E.), the coast continues low and trends eastward for about $2\frac{1}{4}$ miles

45 to the factory of Bormettes. There are several salt marshes on this stretch in front of which may be seen several heaps of salt covered with red tiles and resembling dwellings. A bank of weeds fringes the coast, extending as much as $8\frac{1}{2}$ cables offshore, in places. Four white beacons about a quarter of a mile apart stand on the

50 coast between a quarter of a mile and $1\frac{1}{2}$ miles eastward of the light-structure on the eastern jetty at Port Pothuau. Bormettes factory, close to which is a chimney and two reservoirs, stands between the common mouth of two streams, named Torrents de Pansard and de Maravenne, and a point about half a mile east-north-

Chart 2608.

eastward where a line of hills approaches the coast. About one cable eastward of the common mouth of these streams is a small pier ; a light is exhibited, at an elevation of 13 feet (4^m0), from a pylon 20 feet (6^m1) in height situated at the root of the pier.

Abreast the factory, two jetties enclose a small harbour, and about 2 cables farther north-westward stands a château. At night, the factory is lit by numerous lights which are visible from some distance seaward.

From Pointe de l'Argentière, situated about a quarter of a mile eastward of Bormettes factory, the coast trends east-south-eastward for about 3 miles to Cap de Brégançon and consists of a succession of beaches separated by rocky points, the latter being prolonged seaward by islets. Pointe de Léoube, situated about 1½ miles east-south-eastward of Pointe de l'Argentière and faced with a small but distinctive white cliff, is the most salient of these points, and the largest of the islets is Îlot de Léoube, 39 feet (11^m9) high, situated close offshore about half a mile north-north-westward of Pointe de Léoube.

Batterie des Maures, an artificial islet, lies about a quarter of a mile north-westward of Pointe de Léoube and about one cable offshore. A light is exhibited, at an elevation of 39 feet (11^m9), from a square tower situated on Batterie des Maures.

Îlots de l'Estagnol are two islets lying close offshore about half a mile east-south-eastward of Pointe de Léoube ; Îlot du Jardin, 24 feet (7^m3) high, lies about a quarter of a mile farther eastward. Between Îlots de l'Estagnol and Cap de Brégançon, about 1½ miles south-eastward, the coast recedes to form a bay which is overlooked from northward by Château de Brégançon, a large white building with turrets, situated about 6 cables north-north-eastward of Îlot du Jardin.

Vessels may obtain anchorage southward of Pointe de l'Argentière, south-westward of a line joining Pointe de Léoube and Cap de Brégançon, bearing about 123° ; there are several mooring buoys at this anchorage.

There is anchorage, sheltered from northerly and easterly winds, in Mouillage de Brégançon or du Jardin, the bay north-westward of Cap de Brégançon. A good berth is in depths of about 9 fathoms (16^m5), mud and weed, with the western extremity of Cap de Brégançon in line with the south-western extremity of Île du Levant, bearing about 136°. Two mooring buoys are moored westward of this anchorage, about midway between Pointe de Léoube and Cap de Brégançon.

Cap de Brégançon (*Lat.* 43° 06' N., *Long.* 6° 19' E.) is the south-western extremity of Rocher de Brégançon, a rocky islet crowned with a fort and connected with the mainland by a mole. From Cap de Brégançon, the coast is high and trends about 2 miles eastward to Cap Blanc, so called from the colour of its rocks which can be identified from some distance seaward. Cap Bénat, situated about 4½ cables north-eastward of Cap Blanc, is the south-eastern extremity of a large, rounded and rugged hill, 607 feet (185^m0) high ; close eastward of the cape lies Îlot Cristaux (Christaou), a rock 20 feet (6^m1) high, on which is a white beacon. White beacons also stand close within the extremities of Cap Bénat and of Cap Blanc, and a dismantled signal station is situated on the summit of the cape.

Cap Bénat light is exhibited, at an elevation of 198 feet (60^m3),

Charts 2607, 1780, 160, 2158a, 449.

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from a white circular stone tower and dwelling, 41 feet (12^m5) in height, situated about 1½ cables within the extremity of Cap Blanc.

A black pillar buoy is moored about half a mile south-south-eastward of Cap Blanc.

For prohibited anchorage area between Cap de Brégançon and Cap Blanc, see page 121.

Bormettes range.—Firing practice takes place between 0900 and 1100 on the first Monday, Tuesday and Wednesday of each month in an area southward of Bormettes.

Chart 2607.

Gunnery practice areas.—Gunnery practices are carried out in the neighbourhood of Toulon and Îles d'Hyères in two areas:—

(a) The western area is bounded northward by the coast; eastward by the meridian of Pointe du Titan light-tower; southward by the parallel of 42° 50' N.; and westward by the meridian of Cap Sicié signal station.

(b) The eastern area is bounded northward by the coast between Cap Nègre and Cap Drammont; eastward by the meridian of Cap Drammont; southward by the parallel of Pointe du Titan light-tower; and westward by the meridian of Cap Nègre.

The following signals are shown when firing is taking place in either of the areas:—

By day a red flag is displayed from the masthead of one of the signal stations of Cépet, Pourquerolles or Camarat, from half an hour before the practice begins until it is completed.

Vessels should avoid passing through either area, while firing is being carried out; and at all times should pay strict attention to any instructions given by the men-o'-war patrolling the area.

At night no signal is exhibited from the shore stations, but the vessels carrying out the practices will, in addition to their ordinary navigation lights, exhibit a red light at the mast head. The targets carry no lights, and may be anchored, drifting, or towed; in the last case they will carry the usual navigation lights; the tow will be 11 cables long.

If a vessel, not warned by the searchlights of the vessels carrying out the practices, inadvertently finds herself in the area where firing is taking place, she should pass at least 3 miles astern of the tug.

When the exercises are completed the last vessel to finish will fire four red rockets, at intervals of 20 seconds, and, 2 minutes later, four white rockets fired simultaneously.

The supervision of the practice areas being particularly difficult at night, vessels should use every endeavour to keep clear of them when firing is taking place.

Permanent practice ranges.—There are four permanent practice ranges within the western gunnery practice area, and gunnery practices take place regularly at fixed hours on these ranges without previous warning being given. These ranges are:—The anti-aircraft range at Sainte Elme (Lat. 43° 04' N., Long. 5° 54' E.) (page 104); the aircraft range at Golfe de Giens (page 105); the aircraft range at Rade de la Badine (page 122) and Bormettes range (see above).

Submarine exercise area.—A submarine diving exercise area is situated south-westward of Pointe de Léoube; the area is a square, its sides being about 2½ miles long. The north-eastern corner of the square lies about 8 cables west-south-westward of Pointe de Léoube

Charts 2607, 1780, 160, 2158a, 449.

Chart 2607.

and the south-eastern corner about $2\frac{1}{4}$ miles southward of the same point.

A rectangular area where submarines may rest on the sea bottom is situated within the diving exercise area ; it is about 11 cables long and $2\frac{1}{4}$ cables wide and its north-eastern corner is situated about $1\frac{1}{2}$ miles south-south-westward of Pointe de Léoube. 5

Torpedo ranges.—There are two torpedo ranges in Rade d'Hyères, the Bénat and the Badine range.

The Bénat range extends from a position, marked by a pylon, on the western shore of Rade d'Hyères, close southward of the naval air service pier, in a 269° direction to abreast Cap Bénat, and is marked at intervals by buoys. 10

The Badine range extends from a position marked by a beacon on the south-western entrance point of Le Roubaud river, about $1\frac{1}{2}$ miles south-westward of Port Pothuau, in a $156\frac{1}{2}^\circ$ direction to the entrance to Baie d'Alicastre, and is marked at intervals by buoys. This range is used especially by torpedo craft and submarines. 15

Measured distance.—There is a measured distance commencing about 2 miles south-eastward of Cap de Brégançon and extending about $10\frac{1}{2}$ miles east-north-eastward. For details, see page 127. 20

Chart 2608.

CAP BÉNAT TO CAP CAMARAT.—Light.—Dangers.—

Beacon.—Anchorage.—From Cap Bénat, the coast trends northward for about 3 miles to the village of Le Lavandou, and then eastward for a similar distance to Cap Nègre, forming a bight named Rade de Bormes. The coast here consists of a succession of beaches separated by rugged points and is overlooked by the village of Bormes, situated on the slopes of a hill about $1\frac{1}{2}$ miles west-north-westward of Le Lavandou. Prominent objects in Bormes are a large isolated hotel on the western side of the village and a large villa, painted white and yellow, situated half-way up the hillside. 25 30

A light is exhibited, at an elevation of 24 feet (7^m3), from a black pylon, 23 feet (7^m0) in height, situated on the beach abreast the village of Le Lavandou. 35

The remains of a small jetty project south-south-westward from the shore abreast Le Lavandou ; a white buoy is moored on the western side of the remains of the jetty. In 1951, work was in progress constructing a jetty close eastward of the old jetty.

Rocher de la Fourmigue (*Lat.* $43^\circ 06' N.$, *Long.* $6^\circ 24' E.$) is a rock, 13 feet (4^m0) high, situated about $1\frac{1}{2}$ miles east-north-eastward of Cap Bénat ; it is surrounded to a distance of about half a cable by sunken rocks. A beacon stands on Rocher de la Fourmigue and the rock is covered by a *green* sector of Le Lavandou light between the bearings of 315° and 328° . 40 45

A shoal rocky spit extends about $3\frac{1}{4}$ cables eastward of Pointe de l'Esquillette, situated about three-quarters of a mile northward of Cap Bénat ; it is covered by a *red* sector of Le Lavandou light between the bearings of 354° and 029° .

Sèche de Gouron is a rocky bank with a least depth of 6 fathoms (11 m0) over it, situated about $1\frac{1}{2}$ miles north-north-eastward of Pointe de l'Esquillette and about three-quarters of a mile offshore. 50

There is anchorage in the northern part of Rade de Bormes off the

Charts 1780, 160, 2158a, 449.

Chart 2608.

coast between Le Lavandou and Pointe du Nard Viou, about half a mile eastward, sheltered from northerly and north-westerly winds, but exposed to southerly winds, especially those from south-eastward. Vessels may obtain anchorage, in depths of from 8 to 11 fathoms (14^m6 to 20^m1), muddy sand and good holding ground, southward of Pointe du Nard Viou, or at about 3 cables south-eastward of Le Lavandou village, over a bottom of mud and weed and good holding ground.

Between Pointe du Nard Viou and Cap Nègre, about 2½ miles eastward, the coast consists of three small bays of which Anse de Cavalière, the easternmost, entered between Pointe de Lavet and Cap Nègre, about one mile eastward, is the most important. At the head of this bay is a fine sandy beach, close within which stands a villa built in the Moorish style with a minaret. Cap Nègre is a headland of moderate elevation and dark colour, terminating in steep cliffs and crowned with a house with two towers which, when viewed from eastward, resembles a signal station. On each side of the point are high hills covered with pine trees which give the cape a dark aspect.

There is good anchorage in Anse de Cavalière, in depths of 6 fathoms (11^m0), weed, about 1½ cables offshore.

*Chart 2607.***Baie de Cavalaire. — Light. — Buoy. — Danger. — Anchorage.**

—Baie de Cavalaire is entered between Cap de Cavalaire, situated about 4½ miles east-north-eastward of Cap Nègre, and Cap Lardier, about 3½ miles farther eastward. Cap de Cavalaire is the southern extremity of a promontory which rises to an elevation of 230 feet (70^m1) close northward of the cape. Pointe de Cavalaire, the eastern extremity of the promontory and about 100 feet (30^m5) high, lies about 4 cables north-eastward of Cap de Cavalaire, and on it is a white mark, used in connection with the measured distance (page 127). The village of Cavalaire stands on the western shore of the bay, about 4 cables north-westward of Pointe de Cavalaire; a white hotel and twin houses near the shore are prominent in the village.

Baie de Cavalaire is surrounded by hills which slope gradually to its shores. Numerous villas are scattered along the head of the bay, which, except where it is broken by two rocky points, consists of a fine sandy beach. On the eastern side of the head of the bay is a large isolated house with a red roof and tower, and close to it is a small tower issuing from a thicket.

There is a small harbour close south-eastward of the village of Cavalaire (*Lat. 43° 10' N., Long. 6° 32' E.*), sheltered from eastward by a jetty; a light is exhibited, at an elevation of 23 feet (7^m0), from a black pylon situated on the head of the jetty.

A mooring buoy is moored about 3½ cables north-eastward of the light-structure.

Baie de Cavalaire affords shelter from the mistral but is untenable during winds from east through south to south-west. The bottom is of mud covered with weed and is good holding ground provided the vessel does not anchor in too great depths, where the steep slope of the bottom leads to dragging. Good anchorage may be obtained north-eastward of Cavalaire village, in depths of from 5½ to 8 fathoms (10^m0 to 14^m6), with the northern white mark for the measured distance (page 128) bearing 295°, the ruined mill of Cubière, situated about 8 cables northward of Cavalaire light-structure, bearing 335°, and the

Charts 1780, 160, 2158a, 449.

Chart 2607.

central peak on Île du Levant, in line with Pointe de Cavalaire, bearing 198°.

On the eastern side of Baie de Cavalaire near its head is Mouillage de Jova, an anchorage off a sandy beach which affords shelter during easterly and north-easterly winds. 5

Cap Lardier to Cap Camarat. — Dangers. — Light. — Signal station.—Anchorage.—Cap Lardier may be identified by the greyish colour of its barren rocks and there is on it a white mark in connection with the measured distance (page 128). Baie de Briande is entered 10 between Cap Lardier and Cap Taillat, about $1\frac{1}{2}$ miles north-eastward; it affords shelter from the mistral but is exposed to all winds from seaward. Cap Taillat is the south-eastern extremity of a peninsula about 200 feet (61^m0) high, and is crowned with a beacon in connection with the measured distance (page 128); it is connected with the 15 mainland by a very low neck of sand named Isthme de Bon Porté.

Both Cap Lardier and Cap Taillat are fronted by rocks; a rock with a depth of 2 feet (0^m6) over it lies about one cable east-south-eastward of the former cape, and rocks extend about $1\frac{1}{2}$ cables south-eastward and $2\frac{1}{2}$ cables eastward, of the latter cape. 20

Roche Quairolle, a rock with a depth of $3\frac{1}{2}$ fathoms (6^m4) over it, lies about $5\frac{1}{2}$ cables east-south-eastward of Cap Lardier.

Baie de Bon Porté is entered between Cap Taillat and Cap Camarat, a cape terminating in a red point about $2\frac{1}{2}$ miles north-eastward. A rock named l'Enfer lies about $1\frac{1}{2}$ cables north-eastward of Cap Taillat, 25 and rocks, both above-water and sunken, extend about three-quarters of a mile eastward of Cap Camarat, the most prominent being Rocher des Portes, 39 feet (11^m9) high and Roche Fouras, 16 feet (4^m9) high, situated about half a cable, and $3\frac{1}{2}$ cables, respectively, eastward of the cape. 30

A light is exhibited, at an elevation of 426 feet (129^m8), from a square tower, 69 feet (21^m0) in height, situated about 3 cables westward of the extremity of Cap Camarat.

A signal station is situated close south-eastward of Cap Camarat light-structure. 35

Basse de Cassin, a shoal with a depth of 8 feet (2^m4) over it, lies in Baie de Bon Porté, about $1\frac{1}{2}$ miles north-north-eastward of Cap Taillat and about a quarter of a mile offshore. Rocher Escudelier, 16 feet (4^m9) in height, lies close offshore about $1\frac{1}{2}$ miles northward of Cap Taillat. 40

Baie de Bon Porté is sheltered from the mistral but is fully exposed to easterly winds. A prominent isolated villa is situated about 8 cables westward of Cap Camarat. Anchorage may be obtained in the bay, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), with Pointe du Titan light-structure bearing about 217° and seen over Isthme de Bon Porté, 45 and the old tower of Paillas mill, situated about $3\frac{1}{2}$ miles west-north-westward of Cap Camarat light-structure, bearing about 311° and open south-westward of Rocher Escudelier (*Lat.* 43° 11' N., *Long.* 6° 39' E.).

Measured distance.—A measured distance, for testing the speed of large vessels, is situated between Cap de Brégançon and Pointe de Cavalaire. 50

The running marks westward are a black, quadrangular, truncated pyramid, 39 feet (11^m9) in height, situated on the western summit of Île de Porquerolles, in line with a white watch tower in the battery on

Chart 2607.

Cap des Mèdes, bearing 244° ; the running marks eastward are a similar beacon situated on the summit of Cap Taillat, in line with a white wall, 13 feet ($4^{\text{m}}0$) in height, situated on the southern slope of
 5 Cap Lardier, bearing 064° .

The western limit of the measured distance is given by the alignment of the western extremity of Château de Brégançon with a beacon situated between Fort de Brégançon and the mainland bearing 334° . The eastern limit is given by the alignment of a white wall, 16 feet
 10 ($4^{\text{m}}9$) in height, situated on a hillside on the western side of Baie de Cavalaire, with another white wall, 10 feet ($3^{\text{m}}0$) in height, situated on Pointe de Cavalaire, bearing about 329° .

The measured distance between these two alignments is 64,618 feet ($19,695^{\text{m}}5$). This measured distance is divided into five sections by
 15 the following alignments:—

- (i) A beacon on Pointe du Pinet, situated about half a mile northward of Cap Bénat, with a beacon on Îlot Cristaux.
- (ii) A white mark on Pointe du Nard Viou with a beacon on Rocher de la Fourmigue.
- 20 (iii) A white mark in a field at the head of Anse de Cavalière with a beacon situated in a cutting on Cap Nègre.
- (iv) A white mark in line with a wall 7 feet ($2^{\text{m}}1$) in height, situated on the side of a hill midway between Cap Nègre and Baie de Cavalaire, with the eastern side of a large, square, white
 25 house on Pointe du Dattier, situated about $1\frac{1}{4}$ miles west-south-westward of Cap de Cavalaire (*Lat.* $43^{\circ} 10' \text{ N.}$, *Long.* $6^{\circ} 32' \text{ E.}$).

The length of the first section is 11,221 feet ($3,420^{\text{m}}2$); the second 10,243 feet ($3,122^{\text{m}}1$); the third 14,334 feet ($4,369^{\text{m}}0$); the fourth
 30 17,277 feet ($5,266^{\text{m}}0$) and the fifth 11,543 feet ($3,518^{\text{m}}3$).

Fast vessels usually do not proceed farther eastward than the fourth alignment and submerged submarines do not use the three western sections.

Charts 1780, 160, 2158a, 449.

CHAPTER V

SOUTHERN COAST OF FRANCE—CAP CAMARAT TO RIVIÈRE SAINT LOUIS

CLIMATE AND WEATHER.—See page 27.

Charts 2607, 2609.

CAP CAMARAT TO CAP D'ANTIBES.—**Aspect.**—In clear weather, vessels approaching the coast eastward of Îles d'Hyères on about the meridian of Rade d'Agay, about 16 miles north-eastward of Cap Camarat, will first sight a screen of mountains which appear to unite northward with the snow-clad peaks of the Alpes Maritimes. On proceeding farther northward, vessels may distinguish in front of this mountain screen the long ridges of Chaîne des Maures and Chaîne de l'Esterel, separated by the Fréjus valley, situated about 15 miles north-north-eastward of Cap Camarat, while on the west, Îles d'Hyères may be sighted just above the horizon. 5 10

The grey slopes of Cap Camarat (*Lat. 43° 12' N., Long. 6° 40' E.*) will next appear in front of Montagnes de Cavalaire, which are prolonged eastward by a wooded range of which Mont Paillas, 1,016 feet (324^m9) high, situated about 3½ miles west-north-westward of Cap Camarat, is the summit; these mountains are separated by Golfe de Saint Tropez from Montagnes de Saint Pierre, of which Mont Saint Pierre, 1,352 feet (412^m1) high, and situated about 6 miles northward of Mont Paillas, is the summit. 15 20

At the head of Golfe de Fréjus, about 15 miles north-north-eastward of Cap Camarat, stands Montagne de Roquebrune, 1,217 feet (370^m9) high, large, blackish, flat-topped and with a perpendicular fall eastward. Farther eastward may be distinguished the reddish and steep Chaîne de l'Esterel, with three peaks of which the highest is Mont Vinaigre, 2,021 feet (616^m0) high, situated about 10 miles east-north-eastward of Montagne de Roquebrune. Several spurs extend to the coast from Mont Vinaigre and form points of which the most distinctive are Cap Drammont, on which stands a disused signal station, Cap Roux and Cap de l'Esquillon (Aiguillon), which lie about 15, 18 and 21 miles, respectively, north-eastward of Cap Camarat. Cap Roux may be easily identified by its elevation of 1,486 feet (452^m9), by its bare summit and by its dark reddish colour which is specially noticeable when the sun shines on it. On the southern slope of this mountain are several large rocks, separated from one another and called Main du Cap Roux. 25 30 35

From Cap de l'Esquillon, the coast recedes and curves east-north-

Charts 1780, 160, 2158a, 449.

Charts 2607, 2609.

eastward for about 10 miles disclosing a range of less elevated hills which overlook Golfe de la Napoule and Golfe Juan, and appear to terminate in Cap d'Antibes. The mountains in the middle distance, 5 which form the first buttresses of the Alpes Maritimes, may be identified by several remarkable peaks, among which are Montagne de la Chains, 5,630 feet (1,716^{m0}) high, about 20 miles north-westward of Cap de l'Esquillon, and Mont Cheiron, 5,833 feet (1,777^{m9}) high, about 15 miles farther east-north-eastward; about 6 miles southward of this latter 10 mountain, Mont de Gourdon, 2,900 feet (883^{m9}) high, presents a perpendicular fall westward and by its shape resembles Mont Coudon, near Toulon.

On a closer approach to the coast, a disused signal station about half a mile north-north-eastward of Sainte Maxime, a town on the northern 15 shore of Golfe de Saint Tropez; the town of Grasse, overlooking a valley eastward of Chain: de l'Esterel; and Îles de Lérins, which separate Golfe de la Napoule from Golfe Juan, may be distinguished.

During foggy weather vessels should keep in depths of more than 44 fathoms (80^{m5}) on account of the rocks which fringe the coast at 20 several places, the most dangerous of which are situated at Île Saint Honorat (page 142) and Cap d'Antibes (page 145); the former are marked by Tourelle des Moines. See view on chart 2607.

Off this part of the coast, the bottom is usually mud to within half a mile of the coast.

25 See views on chart 2607.

Chart 2607.

CAP CAMARAT TO POINTE DE RABIOU.—Baie de Pampelonne. — Dangers. — Buoy. — Anchorage. — Baie de Pampelonne is entered between Cap Camarat (*Lat. 43° 12' N., Long. 6° 40' E.*) and 30 Cap du Pinet, about 2½ miles northward; it affords shelter from north-westerly winds, the bottom being fine sand with patches of weed in places which improve the holding ground. The head of the bay consists of a low sandy beach; within a distance of about 2 cables from this beach are several sunken rocks, of which the most important is 35 Sèche Salagrue, over which there is a depth of one foot (0^{m3}), situated about 8 cables south-south-westward of Cap du Pinet and 1½ cables offshore. The village of Ramatuelle stands on a hill about 3 miles west-north-westward of Cap Camarat, and is prominent from seaward. Pointe de Bonne Terrasse, on which stands a custom house, is situated 40 about three-quarters of a mile north-westward of Cap Camarat; there is a small fresh-water spring close to the custom house.

A buoy, painted white with two blue horizontal bands, is moored about 9½ cables north-eastward of Cap Camarat light-structure and marks a firing range.

45 Anchorage may be obtained, in depths of about 8 fathoms (14^{m6}), north-north-eastward of Pointe de Bonne Terrasse, with Mont Suane, situated on the northern side of Golfe de Saint Tropez, in line with the chapel of Sainte Anne, about 2½ miles westward of Cap de Saint Tropez, bearing about 326°, and a cutting in a mountain close to Cap Dram- 50 mont (page 137), in line with the easternmost rock of Teste de Can (page 131), bearing about 037°. On account of the rocks and weed which fringe the shore at the head of the bay, vessels should keep Cap Camarat light-structure bearing more than 180°.

Charts 1780, 160, 2158a, 449.

Chart 1744.

Cap du Pinet to Pointe de Rabiou.—Dangers.—Light.—From Cap du Pinet, the coast, which here consists of rounded and wooded hills, trends about $8\frac{1}{2}$ cables north-eastward to Pointe de Capon, and thence about 9 cables north-north-eastward to Cap de Saint Tropez, 5 the eastern extremity of a promontory of moderate elevation. From Cap de Saint Tropez, the coast trends north-westward at an elevation of from 100 to 200 feet (30^m5 to 61^m0) for about 11 cables to Pointe de Rabiou. Roche de l'Ay, a rock, awash, lies at the extremity of a rocky ledge with less than 3 fathoms (5^m5) over it, which extends about 10 3 cables northward from Pointe de l'Ay, situated about midway between Cap de Saint Tropez and Pointe de Rabiou.

Teste de Can, a group of three above-water rocks, lies on a shoal about 6 cables north-eastward of Pointe de Capon and about $3\frac{1}{2}$ cables offshore; the passage between the group and the coast is foul. Basses 15 de Can, with a least depth of $4\frac{1}{2}$ fathoms (7^m8) over them, lie about $5\frac{1}{2}$ cables eastward of Teste de Can. Basses S.E. de Can, with depths of $5\frac{1}{2}$ fathoms (10^m1) over them, lie about 9 cables eastward and 11 cables east-south-eastward, respectively, of Teste de Can.

Plateau Sauvère, a ledge of rocks with depths of less than 3 fathoms 20 (5^m5) over it, extends about three-quarters of a mile north-eastward from Cap de Saint Tropez. La Mouette, an above-water rock, lies on it about one cable, and Basse du Nord-Est, a detached $2\frac{1}{4}$ -fathom (4^m1) rocky patch, about 8 cables, from the cape.

A light is exhibited, at an elevation of 47 feet (14^m3) from Tourelle 25 de la Moutte, a circular tower, the upper part painted red and the lower part white, situated near the extremity of Plateau Sauvère, about 7 cables north-eastward of Cap de Saint Tropez.

Chart 2607.

Le Verhugue (*Lat.* $43^{\circ} 15' N.$, *Long.* $6^{\circ} 45' E.$), a rocky patch with a 30 depth of $7\frac{1}{2}$ fathoms (13^m7) over it, lies about $1\frac{1}{2}$ miles eastward of Teste de Can; this rock is dangerous, the sea breaking heavily over it in bad weather. Cap Taillat in line with Rocher des Portes, bearing about 218° , leads just clear of the foregoing dangers, *see* views on 35 chart 2607.

Chart 1744.

GOLFE DE SAINT TROPEZ.—Aspect.—Golfe de Saint Tropez is entered between Pointe de Rabiou and Pointe des Sardinaux, about 2 miles northward, and the gulf extends about 4 miles west-south-westward to a low but prominent beach at its head. Vessels approach- 40 ing the gulf in average visibility, when about a dozen miles from the entrance, may identify the following landmarks:—

On the southern side, Château Borelly, consisting of a group of square buildings surrounding a white tower, situated about one mile west-north-westward of Cap de Saint Tropez; about $1\frac{1}{2}$ miles westward 45 of Château Borelly, the citadel, town and church tower of Saint Tropez, which will appear as a white mass; and about three-quarters of a mile south-westward of the town, a grey, circular, stone water tower, about 150 feet (45^m7) in height.

At the head of the gulf, a very characteristic tabular mountain may 50 be seen in the background, with a higher conical peak close northward of it.

On the northern side of the gulf, opposite the town of Saint Tropez,

Charts 1780, 160, 2158a, 449.

Chart 1744.

the town of Sainte Maxime with its large white hotel and casino may be seen with a disused signal station on the summit of a hill about half a mile north-eastward of the town, and finally, close within Baie de

5 Bognon, which lies close northward of Pointe des Sardinaux, is a large and very white building which is very prominent from seaward.

The middle of the gulf is occupied by torpedo firing ranges, *see* page 134, and the bottom here consists of bare rock or rocks covered with mud or muddy sand and broken shells. Vessels should not anchor

10 there but should proceed to the anchorages off the southern shore of the gulf, described below, where the bottom is more favourable for anchorage and the shelter better.

Southern side of gulf. — Dangers. — Beacon. — Anchorage. —

Basse Rabiou, a rocky shoal over which there is a least depth of 18 feet

15 (5^m5), lies about 4 cables north-north-eastward of Pointe de Rabiou. It is marked by Tourelle de Rabiou, a circular masonry tower, painted black with a broad white horizontal band, 37 feet (11^m3) in height, and surmounted by two black cones, points upward.

From Pointe de Rabiou, the coast trends west-south-westward for

20 about 4½ cables to Pointe de Saint Pierre. Anse de Canebiers (Canoubies bay) is entered between Pointe de Saint Pierre and Pointe du Cimetière (*Lat. 43° 16' N., Long. 6° 39' E.*), about one mile westward. Close within Pointe du Cimetière, the citadel of Saint Tropez stands on a hill at the foot of which is a cemetery from which the point takes

25 its name. The shores of the bay are fringed with rocks which extend in places as much as 1½ cables offshore, and Basse des Canebiers (Canoubies shoal), over which there is a depth of 3½ fathoms (6^m4), lies about 3¼ cables south-westward of Pointe de Saint Pierre and about 2¾ cables offshore. A large factory stands on the western shore near

30 the head of the bay, and about 7 cables farther inland, on a wooded ridge, is Château de la Messardière, with a pointed roof flanked by towers.

Anse de Canebiers affords shelter from southerly and south-easterly winds over a bottom of mud and weed, moderately good holding

35 ground. A good anchorage berth is in depths of from 6½ to 8 fathoms (11^m9 to 14^m6), about 3 cables northward of a custom house situated close south-eastward of the large factory.

Port de Saint Tropez. — Lights. — Buoys. — Port de Saint Tropez is a small harbour entered between the head of a jetty which extends

40 about 1¾ cables westward from Pointe du Portalet, situated about 3 cables westward of Pointe du Cimetière, and the head of a small mole extending northward, about half a cable south-eastward of the jetty head.

A light is exhibited, at an elevation of 52 feet (15^m8), from a metal

45 pylon, 30 feet (9^m1) in height, situated on the jetty head.

A light is exhibited, at an elevation of 23 feet (7^m0), from the head of the mole.

Vessels drawing 13 feet (4^m0) can be accommodated in the harbour ; in 1950, war damage to the jetty was under repair.

50 Small black conical buoys are moored about one cable northward, and 1¼ cables westward of the head of the jetty ; three similar buoys are moored close together inside the harbour, about one cable south-eastward of the jetty head.

There are no pilots, but the Harbourmaster will berth vessels on

55 request.

Charts 2607, 1780, 160, 2158a, 449.

Chart 1744.

Southern and western sides of gulf. — Light. — Dangers. — Anchorage.—From the entrance to Port de Saint Tropez, the low coast trends west-south-westward for about half a mile to Pointe de la Pinède, a low point with a large white hotel about a quarter of a mile eastward of it. From Pointe de la Pinède, the coast trends westward for about $1\frac{1}{4}$ miles to Pointe de Bertaud at the south-western corner of the gulf. A French naval torpedo factory stands on Pointe de Bertaud and close south-westward of the factory is Château Bertaud, abreast which a jetty extends about $1\frac{3}{4}$ cables west-north-westward from the shore.

A light is exhibited, at an elevation of 39 feet (11^m9), from the head of the jetty.

The southern shore of the gulf between Port de Saint Tropez and Pointe de Bertaud is fringed by a bank extending about 2 cables offshore, on which the depths are less than 3 fathoms (5^m5).

The head of the gulf is formed by Plage de Grimaud, a beach which extends about one mile north-north-westward from Château Bertaud and is broken in the middle by La Foux, a river which is often dry in summer. The town of Grimaud with its ruined château, the latter forming a distinctive grey mass on a conical hill, may be seen about $2\frac{1}{2}$ miles within the beach.

There is good anchorage north-eastward of Pointe de la Pinède (Lat. $43^{\circ} 16' N.$, Long. $6^{\circ} 38' E.$), about $3\frac{1}{2}$ cables westward of the entrance to Port de Saint Tropez; the bottom here is soft mud and good holding ground. A mooring buoy for the use of small French men-of-war is moored about $3\frac{3}{4}$ cables westward of the entrance to Port de Saint Tropez.

There is anchorage about 2 cables westward of Pointe de la Pinède, in depths of from $6\frac{1}{2}$ to 8 fathoms (11^m9 to 14^m6), with the Capucin convent, situated about 4 cables south-south-eastward of the entrance to Port de Saint Tropez, in line with Pointe de la Pinède, bearing about 091° .

Anchorage may be obtained northward of Château Bertaud, partly sheltered from eastward by the shorebank fringing Pointe de Bertaud, over a muddy bottom, good holding ground.

Anchorage may also be obtained off Plage de Grimaud, where the bottom is hard mud and very good holding ground, but this anchorage is exposed to easterly winds.

Northern side of gulf. — Dangers. — Lights. — Beacon. — Anchorage.—Pointe des Sardinaux, the northern entrance point of Golfe de Saint Tropez, is low but rises about one mile westward to a hill, 407 feet (124^m0) high, on which stands a disused signal station which overlooks the whole district. A rocky bank extends about three-quarters of a mile eastward, and about 6 cables east-south-eastward, of the extremity of the point. Tourelle des Sardinaux, a circular masonry tower, the upper part painted red and the lower part white, and surmounted by two red cones, bases together, stands about 6 cables eastward of Pointe des Sardinaux and about 2 cables south-westward of the extremity of the rocky bank. Sèche à l'Huile, a shoal with a least depth of $1\frac{1}{2}$ fathoms (2^m7) over it, lies on the south-eastern edge of the rocky bank, about $2\frac{1}{2}$ cables south-south-westward of Tourelle des Sardinaux.

A light is exhibited from a red circular masonry tower with a broad,

Charts 2607, 1780, 160, 2158a, 449.

Chart 1744.

white horizontal band and surmounted by two red cones, points down, situated on the southern edge of Sèche à l'Huile. In 1951, this light was extinguished.

- 5 La Boute is an above-water rock lying about half a mile eastward of Pointe des Sardinaux, with Roche de la Garde, another similar rock, about three-quarters of a cable farther south-eastward. Basse Cougoulin, over which there is a depth of 3 feet (0^m9), lies about 2 cables east-north-eastward of Pointe des Sardinaux.
- 10 From Pointe des Sardinaux, the northern side of the gulf trends west-south-westward for about 1½ miles to Port de Sainte Maxime. This stretch of coast is fringed by a bank extending as much as 2¼ cables offshore, on which the depths are less than 3 fathoms (5^m5); La Fourmigue, a rock which dries about 2 feet (0^m6), lies near the edge of
- 15 this bank, about one mile west-south-westward of Pointe des Sardinaux and about 1¼ cables offshore.

- The harbour of Sainte Maxime is situated on the eastern side of a bight, the western entrance point of which is Pointe Gaillarde, situated about 2 miles west-south-westward of Pointe des Sardinaux. It is
- 20 sheltered by a mole which extends about one cable west-south-westward from the shore about 3¼ cables eastward of Pointe Gaillarde (*Lat.* 43° 18' N., *Long.* 6° 38' E.). It is accessible to vessels drawing not more than 10 feet (3^m0), which can lie alongside the mole; in 1949, the mole was reported as being partly destroyed. A 9-foot (2^m7) patch
- 25 lies about half a cable west-north-westward of the head of the mole, and a warping buoy lies about three-quarters of a cable north-westward of the same point.

A light is exhibited, at an elevation of 29 feet (8^m8), from a metal mast situated on the head of the mole.

- 30 Vessels may obtain anchorage off Port de Sainte Maxime, sheltered from the mistral but exposed to easterly and south-easterly winds; the bottom here is sand and weed and the holding ground generally is good. Vessels approaching the anchorage must avoid Le Périguiet, a rocky bank with a least depth of 3¼ fathoms (5^m9) over it,
- 35 which extends about 3¼ cables south-eastward from the head of the mole.

From Pointe Gaillarde, the coast trends south-south-westward for about 6 cables to Pointe Croisette, which is cliffy, and thence south-westward for about 2 miles to the northern end of Plage de Grimaud.

- 40 A bank on which the depths are less than 3 fathoms (5^m5) fringes this stretch and extends in places about 3 cables offshore; within the coast, the land rises steeply to an elevation of 1,148 feet (349^m9) at the summit of Haute Suane, about 1½ miles north-westward of Pointe Croisette.

- 45 **Torpedo ranges.—Regulations.**—Torpedo firing is carried out on three ranges in Golfe de Saint Tropez; all three ranges have the same firing point, which is at the head of the jetty extending from the shore close to Pointe de Bertaud. Each range extends about 1¼ cables on either side of the line of fire.

- 50 The short distance range is about 2,734 yards (2,500^m0) in length and the line of fire is 025°. This range is unmarked and navigation within it is prohibited only when it is in use.

The medium-distance range is about 9,296 yards (8,500^m3) in length and the line of fire is 055°. This range is permanently marked by eight

Charts 2607, 1780, 160, 2158a, 449.

Chart 1744.

groups of three buoys at intervals of about $5\frac{1}{2}$ cables, one buoy of each group being moored on the axis of the line of fire, and one on either side of it. A submarine cable and various submerged instruments are permanently in position on this range and anchoring, dredging or fishing with nets is prohibited in the vicinity; in addition, except in the eastern part of the range, submarines are prohibited from submerging. 5

The length of the long-distance range is unlimited and the line of fire is 060° . This range is unmarked and navigation within it is prohibited only when it is in use. 10

Half an hour before firing commences, a red pendant is displayed at the firing point. A boat displaying a white flag is stationed at the end of the long or medium range when practice is in progress, to indicate which range is in use and also to show that navigation is free seaward of its position. In addition, when the long range is in use, a red pendant is displayed on the tower marking *Sèche à l'Huile* (*Lat. $43^{\circ} 19' N.$, Long. $6^{\circ} 41' E.$*). 15

The firing of each torpedo is indicated by a blast on a syren and a white flare at the firing point; the flare is kept burning until the torpedo has completed its run. 20

While the red pendant is displayed at the firing point, all vessels, boats and fishing craft are prohibited from remaining within the limits of the range and the laying of fishing nets or lines is forbidden. Patrol boats are stationed on either side of the range and will turn back all vessels approaching the line of fire. 25

Vessels should anchor at a prudent distance from the range. The above regulations also apply when night practices are taking place.

Firing danger area.—An area in which aircraft carry out various weapon practices is situated in the north-eastern part of *Golfe de Saint Tropez*, see page 133. Near the middle of this area, about $1\frac{1}{2}$ miles west-south-westward of the tower on *Sèche à l'Huile*, is a small rectangular area enclosed by sixteen barrel buoys connected by a steel hawser; this area is indicated by pecked lines on the chart. 35

Directions.—Vessels approaching *Golfe de Saint Tropez* from southward or south-eastward should give a wide berth to *La Moutte* light-tower and should keep south-eastward of the alignment of *Cap Taillat* and *Rochers des Portes*, bearing about 218° , see views on chart 2607, in order to avoid *Basses de Can* and *Le Verhugé*; at night, *Pointe du Titan* light should be kept bearing 219° or more and should not be shut in by *Cap Camarat*. 40

When *Mont Saint Pierre* (chart 2607) is seen open northward of *Pointe de Rabiou*, bearing less than 291° , course may be shaped north-north-westward until the ruins of *Château Grimaud* are seen open northward of *Pointe de Rabiou*, bearing less than 268° , when course should be shaped for the entrance to the gulf, passing northward of *Tourelle de Rabiou*. At night, vessels should not shape course for the entrance to the gulf until the light on the jetty at *Port de Saint Tropez* is sighted. 50

Vessels approaching from north-eastward should keep the citadel at *Saint Tropez* (*Lat. $43^{\circ} 16' N.$, Long. $6^{\circ} 39' E.$*) bearing more than 219° and open south-eastward of the tower on *Sèche à l'Huile*, in order to avoid the rocks off *Pointe des Issambres* (page 136). 50

Charts 2607, 1780, 160, 2158a, 449.

*Chart 2607.***POINTE DES SARDINAUX TO POINTE DE L'AIGUILLE.—**

Coast.—From Pointe des Sardinaux, the coast curves northward and east-north-eastward for about $3\frac{1}{4}$ miles to Pointe des Issambres 5 (Alexandre point), forming Baie de Bougnon, the shore of which consists of a sandy beach fringed by rocks extending over one cable offshore in places. As stated on page 132, a large white building on the northern shore of the bay is very prominent from an offing. Baie de Bougnon affords shelter from north-westerly winds, but the anchorage 10 is not tenable during onshore winds.

Golfe de Frèjus.—Lights.—Islets and dangers.—Golfe de Frèjus is entered between Pointe des Issambres and Cap Drammont, about 7 miles north-eastward; the town and harbour of Saint Raphael lie at the head of Rade de Saint Raphael, a bight at the north-western 15 corner of the gulf.

From Pointe des Issambres, the coast, which is slightly elevated and indented by several small, sandy coves, trends north-north-eastward for about $2\frac{1}{4}$ miles to Pointe de Saint Aygulf. This stretch is backed by hills rising gradually westward and covered with vegetation, and is 20 fringed by a rocky bank extending as much as $1\frac{1}{2}$ cables offshore. Roche Portanier, with a depth of 3 feet (0^m9) over it, lies near the edge of this bank, about $5\frac{1}{2}$ cables southward of Pointe de Saint Aygulf. *Chart 3638.*

From Pointe de Saint Aygulf, the coast trends northward and 25 north-eastward for about $2\frac{1}{2}$ miles to Port de Saint Raphael; it consists of a sandy beach backed by a low plain. At the southern end of the beach is a large bridge and about one mile farther northward is a villa in a copse, while between them is the mouth of Rivière de l'Argens. About half a mile north-eastward of the villa is a French 30 naval seaplane station which was partly destroyed during hostilities and, in 1949, was still in a damaged condition. A jetty extends a short distance from the shore abreast the seaplane station. A light is exhibited, at an elevation of 65 feet (19^m8), from a signal mast close to the root of the jetty. A light for the use of aircraft is occasionally 35 exhibited from the top of the mast.

About a quarter of a mile north-eastward of the seaplane station is a large and prominent white hotel, and about three-quarters of a mile north-eastward of the hotel is the town of Frèjus in which a large pointed belfry shows up clearly from seaward against a background of 40 distant mountains. About 6 miles westward of the town may be seen Montagne de Roquebrune (page 129), dark, flat-topped and with a perpendicular eastern side. *See view facing page 140.*

At the north-eastern end of the sandy beach is the harbour and town of Saint Raphael; a church with a large dome, situated in the southern 45 part of the town close to the harbour, and another church with a square tower, situated about 2 cables farther north-north-eastward, are both prominent.

From Port de Saint Raphael, the coast trends south-eastward for about $1\frac{1}{4}$ miles to Pointe des Lions, which forms the eastern entrance 50 point of Rade de Saint Raphael and which is crowned by the ruins of a large white villa. Les Lions, two reddish-coloured islets, lie about one cable and 4 cables, respectively, west-south-westward of the point.

Îlot Lion de Mer (*Lat.* $43^{\circ} 24' N.$, *Long.* $6^{\circ} 47' E.$), the outer islet, is 39 feet (11^m9) high and is surrounded by above-water and sunken rocks,

Chart 3638.

which extend about half a cable offshore in places. A small statue, about 10 feet (3^m0) in height, stands near the summit of the island and there is a small pier on its northern side. The belfry at Frèjus in line with the large white hotel, bearing about 318°, leads south-westward of the dangers surrounding the islet. 5

A light is exhibited, at an elevation of 61 feet (18^m6), from the top of a red tank, 10 feet (3^m0) in height, situated on Îlot Lion de Mer.

Îlot Lion de Terre, the inner islet, is connected with Pointe des Lions by a chain of rocks, and its southern and eastern sides are fringed by rocks extending about half a cable offshore. The channel separating the two islets has depths of from 9 to 22 fathoms (16^m5 to 40^m2) in the fairway which is about 2 cables wide. 10

From Pointe des Lions, the coast trends eastward for about 3 miles to Cap Drammont, and is fringed by a bank on which the depths are less than 3 fathoms (5^m5), which in places extends about 1½ cables offshore. Near the middle of this stretch of coast and about a quarter of a mile inland is the large building of Saint Joseph orphanage and about a quarter of a mile farther westward is an hotel with two wings. 20

Cap Drammont is a steep, reddish cliff, 482 feet (146^m9) high and crowned with a dismantled signal station; a large greyish-coloured quarry is situated about 4 cables north-westward of the signal station. Île d'Or, on which stands a remarkable square tower, lies about 2 cables westward of the cape, and from its south-western extremity, Basses de l'Île d'Or, a rocky spit on which is a rock, awash, extends about 1½ cables south-westward. A rocky patch, with depths of three-quarters of a fathom (1^m4) over it, lies about one cable southward of Pointe de l'Ay, the western extremity of an islet lying close south-westward of Cap Drammont. Pointe d'Agay is the south-eastern extremity of some islets and rocks extending about three-quarters of a cable south-eastward from the south-eastern extremity of Cap Drammont (*Lat.* 43° 25' N., *Long.* 6° 51' E.). 30

Offshore depths.—Banc de Frèjus and Banc Nouveau are extensions south-westward and south-eastward, respectively, from the shore-bank fronting the coast between Pointe des Lions and Cap Drammont, on which the depths are less than 50 fathoms (91^m4). Banc de Frèjus extends to a position about 2¾ miles south-westward of Île d'Or, with a least depth of 26 fathoms (47^m5) on it and Banc Nouveau extends to a position about 1¾ miles southward of Île d'Or, with a least depth of about 40 fathoms (73^m2) on it. 40

Current.—The current, which sets westward along the coast eastward of Cap Sicié, forms a counter-current in Golfe de Frèjus. Along the shore of Rade de Saint Raphael, the current sets north-eastward, eastward and south-eastward, setting out of the bay between Les Lions. This counter current attains a rate of from three-quarters of a knot to one knot. 45

Rade de Saint Raphael.—Buoys.—Anchorage.—Caution.—Rade de Saint Raphael is open southward but is sheltered from easterly and south-easterly winds, the islets and rocks off Pointe des Lions providing shelter from the latter quarter. The bottom is stiff, muddy clay in which the anchor usually embeds itself and the cable, sinking into the mud, checks yawing. 50

Rocks extend about half a cable offshore from the north-eastern

Chart 3638.

shore of the bay between Pointe des Lions and the jetty which forms the southern side of Port de Saint Raphael.

- Some aircraft mooring buoys are moored close off the seaplane station
5 and also off the coast south-eastward of Port de Saint Raphael.

Men-of-war usually anchor, in depths of from 8 to 11 fathoms (14^m6 to 20^m1), with the square church tower in the northern part of the town of Saint Raphael in line with the head of the jetty (*Lat.* 43° 25' N., *Long.* 6° 46' E.) forming the southern side of the harbour, bearing
10 about 053°. Vessels usually moor with a good scope of cable and anchors disposed north-east and south-west. Merchant vessels anchor closer inshore, in depths of from 6½ to 9 fathoms (11^m9 to 16^m5), west-south-westward of the head of the jetty.

- Caution is necessary when anchoring at night on account of fishing
15 nets which may extend as much as 4 cables offshore; the nets are laid out at sunset and hauled in after sunrise. By day, the seaward ends of the nets are marked by floats but at night, they are unmarked.

Port de Saint Raphael.—Caution.—Light.—Port facilities.—

- The harbour of Saint Raphael is sheltered by a jetty extending about
20 one cable westward from the shore abreast the south-western part of the town, and by a mole projecting about half a cable southward from the shore at the western end of the town. North-westerly winds cause a choppy sea in the harbour and southerly winds send in much surf.

- The harbour is normally accessible to vessels of a draught not exceeding
25 16 feet (4^m9) which can lie alongside the jetty, but in 1948 the jetty was damaged by heavy seas, blocks of its masonry being thrown into the harbour as much as 100 feet (30^m5) from its northern face, making it impossible for vessels to lie alongside. Silting has taken
30 place alongside the mole extending southward from the shore, and also in the northern half of the entrance to the harbour. Local knowledge is essential to vessels wishing to enter the harbour.

A light is exhibited, at an elevation of 44 feet (13^m4), from a grey, iron tower, 32 feet (9^m8) in height, situated on the head of the jetty.

- A light is exhibited at an elevation of 10 feet (3^m0) from a wooden
35 post, painted in red and black, situated on one of the outermost detached blocks of masonry about 27 yards (24^m7) north-westward of the jetty head.

- The Captain of the Port's offices are at the eastern quay. There is
40 a good hospital about half a mile from the harbour. In 1948, the population of the town of Saint Raphael was about 10,000.

Water is laid on to the quays; small quantities of oil and petrol are normally maintained. Only minor repairs to small craft can be undertaken.

- Rade d'Agay.—Light.—Dangers.—Anchorage.—**Rade d'Agay is entered between Cap Drammont and Pointe de la Beaumette, a low point about one mile north-eastward and the bay extends about three-quarters of a mile northward from the entrance. At the head of the bay stands Mornes Rouges d'Agay, a range of reddish hills from 850 to
50 1,000 feet (259^m1 to 304^m8) high. The bay is sheltered from the mistral but is exposed to south-easterly winds, and a swell sometimes sets in from seaward. The signal station at Cap Drammont indicates when the anchorage is untenable.

A light is exhibited, at an elevation of 92 feet (28^m0), from a white

Chart 3638.

square tower and dwelling 48 feet (14^m6) in height, situated on Pointe de la Beaumette.

Vessels approaching Rade d'Agay may identify the following landmarks : On the eastern side, a large grey hotel and a large white house, both situated close to the light-structure on Pointe de la Beaumette ; the ruins of Château d'Agay, consisting of two buildings surrounded by walls, situated about 2 cables north-north-westward of the light-structure ; and a white villa with a square tower, about 3 cables north-north-westward of Château d'Agay. On the western side, Anse de Camp Long (*Lat. 43° 25' N., Long. 6° 52' E.*), opposite Pointe de la Beaumette, a sandy cove which affords shelter to fishing boats, with a green villa situated on the slope of a hill on its northern side ; and a bridge which crosses Rivière d'Agay near its mouth, situated about 6 cables northward of the green villa.

The head of the bay consists of a sandy beach at the eastern end of which, fronting the white villa with a square tower, is a landing place with depths of 3½ fathoms (5^m8) alongside its head. A mooring buoy is normally moored west-south-westward of the landing place ; in 1948, this buoy was not in place.

A bank on which the depths are less than 3 fathoms (5^m5) fringes Pointe de la Beaumette and extends about one cable southward from the point. Le Périguiet, a rock with a depth of 7 fathoms (12^m8) over it, lies about 3 cables south-westward of Pointe de la Beaumette light-structure.

Large vessels should anchor southward of the parallel of Château d'Agay. A good berth is south-westward of the château, in depths of from 8 to 9 fathoms (14^m6 to 16^m5). Small vessels may anchor off the sandy beach at the head of the bay, in depths of from 4 to 4½ fathoms (7^m3 to 8^m2).

These anchorages, over a bottom of mud covered with weed, afford good holding ground when the anchor is bedded in mud. Small vessels with light anchors, however, are liable to drag, especially in fresh breezes.

All vessels sheltering from north-westerly winds are recommended to moor, with anchors disposed north-east and south-west.

Coast.—Dangers.—Beacon.—From Point de la Beaumette, the coast trends east-north-eastward for about one mile to Pointe des Vieilles ; there are numerous villas scattered along this stretch of coast, the easternmost villa having a small slate-covered tower. Two small coves, Calanque de la Beaumette and Calanque des Anglais, indent the coast about 1½ and 4 cables, respectively, eastward of Pointe de la Beaumette, and Île Besse lies close off the coast between them. Les Bessons, a group of islets and rocks, fronts the coast for about a quarter of a mile eastward of Calanque des Anglais.

A rocky bank with depths of less than 3 fathoms (5^m5) over it fronts the coast for about 2½ cables south-westward of Pointe des Vieilles and extends about a quarter of a mile offshore ; on this bank lie Les Vieilles d'Agay, a group of rocks surrounding a small flat island, 27 feet (8^m2) high ; Écueil des Vieilles lies at the south-eastern extremity of the bank, about 2½ cables south-south-eastward of Pointe des Vieilles. La Boute, a small rock, 6 feet (1^m8) high, lies about 3½ cables southward of Pointe des Vieilles, and La Chrétienne, a rock with depths of three-quarters of a fathom (1^m4) over it, is situated about 1½ cables farther

Chart 3638.

southward; Tourelle de la Chrétienne, a circular masonry tower, 31 feet (9^m4) high, painted red with a broad white horizontal band and surmounted by two red cones, points down, stands on La Chrétienne.

- 5 These dangers are covered by a *red* sector of Pointe de la Beaumette light between the bearings of 260° and 294°.

Banc de Vieilles is a small gravel patch with a depth of 25 fathoms (45^m7) on it and greater depths close around it, situated about 8 cables southward of Tourelle de la Chrétienne.

- 10 From Pointe de Vieilles, the coast trends north-north-eastward for about 2 cables to Pointe d'Antheor (Antéore), the southern entrance point of a small bay at the head of which is a viaduct which is prominent from seaward.

Chart 2609.

- 15 From Pointe d'Antheor (*Lat.* 43° 26' N., *Long.* 6° 54' E.), the coast trends north-eastward for about 1½ miles to Cap Roux, a cape terminating in a low point and overlooked by a range of hills facing northward; the summit of the cape is red in colour and is saddle-shaped with a rocky peak standing in the middle of the dip. Close northward of the
20 cape is a large stone building with its lower part pierced by an arch, and farther northward may be seen a viaduct and the buildings of Trayas, above which, in the middle of another saddle, rises a remarkable square rock.

- Rocher d'Aurelle, a rock with two heads, the outer of which is 5 feet
25 (1^m5), and the inner about 2 feet (0^m6) high, lies about 6 cables northward of Cap Roux and about 1½ cables offshore; about 3 cables farther north-eastward and a similar distance offshore is a 5-fathom (9^m1) rocky patch.

Chart 2822.

- 30 From Cap Roux, the coast trends north-north-eastward for about 2½ miles to Cap de l'Esquillon (Aiguillon), a headland 335 feet (102^m1) high, which may be identified by its cliffs, its well-wooded slopes and by a viaduct which girdles the point about half-way up the headland. Pointe de la Paume lies about 2 cables south-westward of Cap de
35 l'Esquillon, with a drying rock close southward of it. La Vaquette, a rock, 3 feet (0^m9) high, lies about 3 cables eastward of Pointe de la Paume.

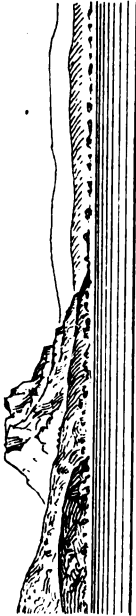
- From Cap de l'Esquillon, the coast trends northward for about 1½ miles to Pointe de l'Aiguille, which terminates in a pyramidal rock;
40 Pointe Espinasse lies about 8 cables north-north-eastward, and Pointe Rabiou, about one mile north-north-eastward, of Cap de l'Esquillon. This stretch of coast consists of cliffs forming the foot of a range of reddish hills which attain an elevation of 850 feet (259^m1) and descend steeply to Pointe de l'Aiguille.

- 45 A 1½-fathom (2^m3) patch lies about one cable east-north-eastward of Pointe Espinasse, and Rocher du Port, a 3-foot (0^m9) rocky patch, lies about 1½ cables south-eastward of Pointe de l'Aiguille.

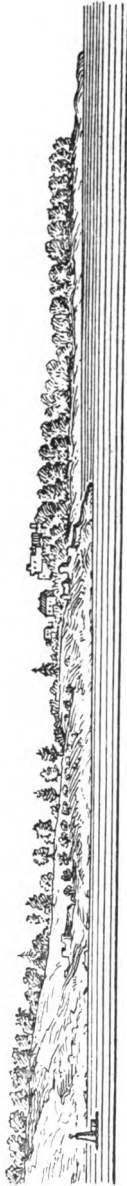
GOLFE DE LA NAPOULE AND GOLFE JUAN.—Golfe de la Napoule.—General remarks.—Golfe de la Napoule is entered

- 50 between Pointe de l'Aiguille and Pointe Croisette, about 4 miles east-north-eastward, with Îles de Lérins extending as much as 2 miles southward of the latter point. Île Saint Honorat, the southernmost of these islands, is easily identified by a château near the middle of its

Charts 2609, 1780, 160, 2158a, 449.



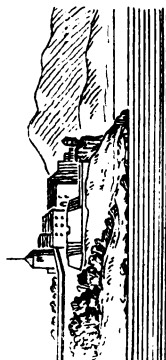
Montagne de Roquebrune.
Plage de Fréjus.
Golfe de Fréjus, from the entrance.
(Original dated 1876.)



Tourelle de Balaignier.
Abbaye Saint Honorat &
ruins of battery on Pointe du Dragon
bearing about 140°.
Marks for clearing Bronde de Bataignier.
(Original dated 1876.)

Pointe Barbier.

To face page 141.



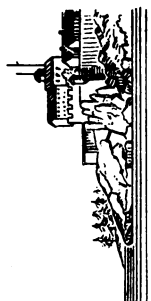
*Mont Barbossé & northern extremity of
citadel.*

(Original dated 1876.)



*Northern side of flat shoulder of Mont
Barbossé & southern side of ruins crowning
Pilon de Saint Pierre.*

(Original dated 1876.)



*The pines on Pointe du Yengeur seen above
the rocks at the foot of the citadel, bearing
about 110°.*

(Original dated 1876.)

Chart 2822.

southern coast and by the belfry of an abbey which emerges from trees close northward of the château. Tourelle des Moines, a red and white tower, standing about 4 cables south-south-eastward of the château, may also be distinguished. About one mile northward of the château and on the northern coast of Île Sainte Marguerite, the northernmost island, will be seen a citadel, in which is a disused signal station. 5

The western side of Golfe de la Napoule is overlooked by the foothills of Mont de l'Estérel, which terminate eastward in Piton de Saint Pierre, 430 feet (131^m1) high, situated about 1½ miles north-westward of 10 Pointe de l'Aiguille, on the summit of which are the ruins of a convent. On the coast at the foot of Piton de Saint Pierre is the village and ancient château of Napoule; the latter should not be confused with a large grey building, situated half-way up a hill about 4 cables southward of the village and close northward of a railway viaduct. 15

On the northern side of the gulf, the hills on which are the villages of Mougins and Le Cannet, rise gradually towards the interior, *see* views on chart 2609. The town and port of Cannes (*Lat.* 43° 33' N., *Long.* 7° 01' E.) lies at the foot of the hills on the north-eastern shore of the gulf, about 1½ miles north-westward of Pointe Croisette. 20

Coast.—Anchorage.—From Pointe de l'Aiguille, the coast trends westward for about 6 cables to the village of Théoule, where there is a small jetty affording shelter to boats. Mouillage de Théoule, an anchorage off the coast between Pointe de l'Aiguille and Théoule, affords good shelter from westerly and southerly winds over a bottom 25 of mud, good holding ground. Vessels have to approach close inshore to find depths of from 8 to 11 fathoms (14^m6 to 20^m1). A good berth is in depths of about 11 fathoms (20^m1), about 2 cables east-north-eastward of the village.

From La Napoule village, the coast trends north-eastward for about 2½ miles to Pointe de la Bocca; this stretch consists of a sandy beach fringed by a bank on which the depths are less than 5 fathoms (9^m1), extending as much as 2 cables offshore in places. About 4 cables north-north-eastward of La Napoule village is the mouth of Rivière La Siagne and at about a similar distance westward of Pointe de la Bocca is an important railway station. 35

From Pointe de la Bocca the coast trends about 11 cables eastward to a rounded point which shelters the harbour of Cannes from westward; the ground within this stretch is covered with villas and gardens extending up to the town of Cannes. 40

Rade de Cannes.—Lights.—Dangers.—Anchorage.—Rade de Cannes is entered between the rounded point described above and Pointe Croisette, about 1½ miles south-eastward; its shores are fronted by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as 4 cables offshore. The harbour of Cannes is 45 situated at its north-western corner and is sheltered from westward by a jetty which extends about 2¾ cables south-eastward from the rounded point, and from eastward by a jetty extending about 1¾ cables southward from the shore about a quarter of a mile farther north-eastward. A conspicuous rose-coloured hotel stands near the root of 50 the western jetty, and about one cable farther north-north-westward, the square Tour de l'Observatoire rises from Mont Chevalier with the square belfry of the cathedral close northward of it.

Pointe Croisette is low and sandy with a white casino standing on

Charts 2609, 1780, 160, 2158a, 449.

Chart 2822.

it ; northward of the point, the ground rises to a hill 804 feet (245^m1) high, on the summit of which, about 1½ miles north-north-eastward of Pointe Croisette, is a water tower capped with a crenellated parapet 5 which forms a prominent landmark ; a large white hotel, situated about half-way up the hill, is also prominent.

A light is exhibited, at an elevation of 30 feet (9^m1), from an iron column 20 feet (6^m1) in height, situated at the head of the western jetty of Cannes harbour.

- 10 A light is exhibited, at an elevation of 26 feet (7^m9), from a black tower, 49 feet (14^m9) in height, and surmounted by a black cone, situated on Le Sécant, a rock lying about one cable northward of the western jetty head.

- There are several dangers in the approach to Rade de Cannes.
- 15 Rocher Finié, with a depth of 5½ fathoms (9^m6) over it, lies about 3½ cables east-south-eastward of Pointe de la Bocca and about 2 cables offshore. La Fouillée (*Lat.* 43° 32' N., *Long.* 7° 00' E.), two rocky patches with depths of 3½ fathoms (5^m9) over them, lie about 5½ cables west-south-westward of the western jetty head and about 4 cables offshore ; a 3½-fathom (6^m9) rocky patch lies about half a cable farther south-eastward. La Roure, Le Pigeonnier, La Traille and La Lière are rocky patches with depths of 8, 11, 10 and 6 fathoms (14^m6, 20^m1, 18^m3 and 11^m0), respectively, over them, lying between 5 cables south-eastward, and 3 cables southward, of the western jetty head.
- 25 Le Four à Chaux, a bank with a least depth of 3½ fathoms (6^m9) over it, lies in Rade de Cannes, about half a mile south-eastward of the western jetty head and for about half a mile south-westward of this bank, the bottom is rocky and the depths irregular.

- Small vessels may obtain anchorage about 2 cables southward of the 30 western jetty head, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), mud and good holding ground, between the alignments of Tour de l'Observatoire and the light-structure on the western jetty head, bearing about 322°, and Tour de l'Observatoire and the cathedral belfry, bearing about 003° ; strong southerly winds raise a high sea at 35 this anchorage.

- Îles de Lérins.—Dangers.—Beacons.**—This group of wooded islands, of which Île Saint Honorat and Île Sainte Marguerite are the two principal ones, lies on a rocky bank on which the depths are less than 3 fathoms (5^m5), which extends about 2½ miles southward from 40 Pointe Croisette. Île Saint Honorat, the southernmost island, is low and flat, and lies with Pointe Barbier, its western extremity on which are the ruins of a battery, about 1½ miles southward of Pointe Croisette. A château stands on a projection near the middle of the southern coast of the island, about half a mile east-south-eastward of Pointe Barbier, 45 and an abbey, the belfry of which shows above the surrounding trees, lies about one cable farther northward. On Pointe Saint Féréol, the eastern extremity of the island, is a ruined chapel, and about 1½ cables east-south-eastward of the point is Île Saint Féréol, a low islet, surrounded by smaller islets and rocks.

- 50 The rocky bank on which the depths are less than 3 fathoms (5^m5) which surrounds Îles de Lérins, extends about half a mile southward of the château on Île Saint Honorat ; Tourelle des Moines, a circular masonry tower, painted red with a broad white horizontal band and surmounted by two red cones, points down, stands near its south-

Chart 2822.

eastern extremity, about $3\frac{1}{2}$ cables south-south-eastward of the château. The *red* sector of Pointe de l'Îlette light (page 145), between the bearings of 045° and 056° , covers the bank southward of Île Saint Honorat.

Île Sainte Marguerite lies about 4 cables northward of Île Saint Honorat, with Pointe Bataignier (Batiguier), the north-western extremity of the island, on which stands a ruined tower, about three-quarters of a mile south-south-westward of Pointe Croisette. A citadel, in which there is a disused signal station, stands near the middle of the northern coast of the island, about half a mile eastward of Pointe Bataignier. Pointe de la Convention, the eastern extremity of the island, has a ruined battery close west-south-westward of it, and about one cable east-south-eastward of the point and connected to it by a ridge of rocks is Île de la Tradelière (*Lat.* $43^\circ 31' N.$, *Long.* $7^\circ 05' E.$), a low islet.

A ridge of the rocky bank surrounding Îles de Lérins connects Île Saint Honorat with Île Sainte Marguerite and on this ridge, about midway between the two islands, is Plateau du Milieu, with depths of less than one fathom (1^m8) over it. Plateau du Grand Jardin, the shorebank fronting the southern coast of Île Saint Marguerite, has depths of 2 fathoms (3^m7) and less on it.

Between Pointe Bataignier and the citadel, the north-western coast of Île Sainte Marguerite is fronted by Plateau de la Jonquière, a bank with depths of less than one fathom (1^m8) on it, which extends as much as $2\frac{1}{4}$ cables northward of Pointe Bataignier. Tourelle de Bataignier, a circular masonry beacon-tower, the upper part painted black and the lower part white, 15 feet (4^m6) high and surmounted by two black cones, points together, stands near the north-western edge of Plateau de la Jonquière, about $1\frac{1}{2}$ cables northward of Pointe Bataignier. Bronde de Bataignier, a $5\frac{1}{4}$ -fathom (9^m6) rocky patch, on which the sea breaks during southerly winds, lies about $2\frac{1}{4}$ cables north-westward of Tourelle de Bataignier. *See* view facing page 140.

A shoal flat on which the depths are less than 3 fathoms (5^m5) and on which are several rocky patches, connects Plateau de la Jonquière with Pointe Croisette. Les Gaous or Rochers du Passage, with depths of $1\frac{1}{4}$ fathoms (2^m3) over them, are the southernmost of these patches and lie about $3\frac{1}{4}$ cables southward of Pointe Croisette.

Basse de la Convention, a one-fathom (1^m8) patch, lies on the outer edge of the rocky 3-fathom (5^m5) shorebank, about one cable northward of Pointe de la Convention; Basse du Vengeur, a rocky bank on which the depths are less than 5 fathoms (9^m1), extends about $2\frac{1}{2}$ cables north-eastward of Pointe du Vengeur, situated about $3\frac{1}{2}$ cables west-north-westward of Pointe de la Convention. Mont Barbossi, a truncated cone in Mont de l'Esterel, in line with the northern extremity of the citadel, *see* view facing page 141, or Piton Saint Pierre bearing about 270° and open northward of the citadel, leads northward of these dangers.

Cannes harbour.—Port facilities.—Life-saving.—The harbour of Cannes is sheltered from eastward by Jetée Albert Edouard and from westward by Quai Max Laubœuf, formerly called Quai du Môle. The latter extends south-eastward from Quai Saint Pierre, the quay forming the western side of the harbour, and is prolonged by a dog-legged jetty. In the middle of the entrance between the heads of the

Chart 2822.

jetties is Le Sécant, on which is a light-tower described above ; rocks extend eastward and south-eastward of Jetée Albert Edouard and vessels must pass south-westward of Le Sécant light-structure.

- 5 In 1948, the north-eastern side of Quai Max Laubœuf was dredged to a depth of 23 feet (7^m0), and the southern part of the harbour to a depth of 19 feet (5^m8), as indicated by pecked lines on the chart ; Quai Max Laubœuf is about 656 feet (199^m9) in length and can accommodate vessels of a length of about 400 feet (121^m9) alongside.

- 10 The northern side of the harbour shoals rapidly and the bottom is strewn with rocks, but there are several landing places there. The harbour is usually very crowded with yachts and should not be entered until a berth has been arranged with the harbourmaster.

- In 1948, the population of Cannes was about 50,000 ; there is a civil
15 hospital in the town.

Fresh water is laid on to the quays ; very small quantities of coal and liquid fuel are stocked.

There is a 12-ton crane on Quai Max Laubœuf ; minor repairs to small craft can be undertaken.

- 20 There are several slipways at the head of the port capable of taking small craft of a draught not exceeding 11 feet (3^m4).

A line-throwing apparatus is maintained on Île Saint Honorat.

Passage between Île Saint Honorat and Île Sainte Marguerite.

- Directions.**—**Anchorage.**—Vessels of a draught of less than
25 11 feet (3^m4) may pass between Îles Saint Honorat and Sainte Marguerite. In clear weather, vessels from eastward using this channel should proceed along the southern coast of Île Sainte Marguerite about one cable offshore, keeping the château at La Napoule (*Lat. 43° 32' N., Long. 6° 57' E.*) open northward of Mont Barbossi, or the northern side
30 of the flat shoulder adjoining Mont Barbossi in line with the southern extremity of the ruins crowning Piton de Saint Pierre, *see* view facing page 141, which leads between Plateau du Grand Jardin and Plateau du Milieu in a least depth of 11 feet (3^m4), in a channel about three-quarters of a cable wide. When westward of the alignment of a white
35 turret surmounted by a statue of the Virgin Mary, situated on the northern coast of Île Saint Honorat, and the belfry of the abbey on that island, vessels may approach the Saint Honorat side of the channel, otherwise the northern coast of that island should be avoided.

- Vessels may obtain anchorage between Île Saint Honorat and Île
40 Sainte Marguerite, sheltered from northerly and southerly winds over a bottom of muddy sand and weed, good holding ground. A good berth at the western end of the passage is on the alignment of the white turret and the abbey belfry, bearing about 164°, or, in the eastern part of the passage, eastward of Plateau du Grand Jardin.
45 Should the wind shift eastward, vessels should take refuge in Golfe de la Napoule or, if it shifts westward, in Golfe Juan.

Passage between Île Saint Marguerite and Pointe Croisette.—

- Directions.**—Small coasting vessels sometimes use the passage between Île Sainte Marguerite and the coast of the mainland, either to
50 shorten the route or to obtain shelter from onshore winds. Vessels approaching from westward should keep the pines on Pointe du Vengeur bearing about 110° and just open northward of the rocks at the foot of the citadel, which leads across the shoal bank in a least depth of 10 feet (3^m0), *see* view facing page 141. When about 2 cables

Chart 2822.

from the north-western angle of the citadel, the shoal bank will have been passed and course may be shaped eastward to pass about one cable northward of the citadel. Vessels approaching from eastward should pass about one cable northward of the citadel and should then bring a stone sentry-box, situated on the north-western angle of the citadel, in line astern with the eastern gable on one of the buildings, bearing 125° , which leads across the shoal bank in a least depth of 10 feet (3^m0), but vessels must adhere closely to this leading line. When the light-structure on the head of the western jetty of Cannes harbour is in line with Tour de l'Observatoire, course may be shaped direct for the harbour or westward as necessary.

There is another channel across the shoal bank which is about half a cable wide and has a least depth of 11 feet (3^m4). Vessels using it should keep Hôtel du Cap (*Lat.* $43^{\circ} 33' N.$, *Long.* $7^{\circ} 07' E.$) on Cap d'Antibes (page 145) bearing about 073° and open its own width northward of La Fourmigue light-structure (page 146), which should bring the first white house south-eastward of the hotel just open northward of the light-structure.

Anchorage. — Submarine cable. — Beacons. — Prohibited anchorage.—Mouillage de Sainte Marguerite, northward of the citadel, affords sheltered anchorage from all except easterly winds. The anchorage cannot be approached from westward except by small vessels on account of the shoal bank connecting the island and Pointe Croisette. The best berths are in depths of from 8 to 11 fathoms (14^m6 to 20^m1), mud or muddy sand and moderately good holding ground, northward and north-eastward of the citadel, avoiding the prohibited area. Small vessels anchor close inshore north-westward of the citadel and take a hawser ashore. There are several landing places westward of the citadel.

A submarine cable, the position of which is indicated by pecked lines on the chart, crosses to Pointe Croisette from a position on the coast close eastward of the citadel. The points where it enters the water and its direction are indicated by two pairs of beacons, each painted in blue and white horizontal bands and surmounted by a white disc. The beacons eastward of the citadel are in alignment when bearing 165° , and those at Pointe Croisette, when bearing 332° . Vessels must not anchor in the vicinity of these alignments.

Golfe Juan. — General remarks. — Lights. — Radiobeacon. — Signal station.—Golfe Juan is entered between Île de la Tradelière and Pointe de l'Ilette, the south-western extremity of Cap d'Antibes, about $2\frac{1}{2}$ miles north-eastward; it is sheltered from south-westward by Îles de Lérins. Viewed from seaward, the gulf appears to be bounded northward by a range of low hills covered with vegetation, which terminate eastward in La Garoupe, a hill about $1\frac{1}{2}$ miles north-north-eastward of Pointe de l'Ilette; on the western side of the gulf these hills follow the coast southward to form a buttress terminating at Pointe Croisette and separating Golfe Juan from Golfe de la Napoule.

A light is exhibited, at an elevation of 48 feet (14^m6), from a white circular tower and dwelling, 31 feet (9^m4) in height, situated on Pointe de l'Ilette.

The south-western shore of Golfe Juan is dark and rocky and lies at the foot of some relatively high hills covered with vegetation and buildings, amongst which Hôtel Metropole or Cannes-Eden, a large building

Chart 2822.

halfway up a hill about $1\frac{1}{2}$ miles north-eastward of Pointe Croisette, is prominent ; at the foot of this hill and about 2 cables south-eastward of the hotel, Batterie de la Fourcade stands on a not very salient point by
5 the side of a bridge.

The head of Golfe Juan is formed by a beach of sand and gravel, behind which are a large number of houses and villas. At the western end of the beach, about $2\frac{1}{2}$ miles north-eastward of Pointe Croisette, is the harbour and village of Golfe Juan ; a high, yellow, rectangular
10 house, situated close within the beach about 3 cables north-eastward of the village, is very prominent from seaward.

Vallauris light is exhibited, at an elevation of 546 feet (166^m4), from a white square tower, 51 feet (15^m5) in height, situated about half a mile west-north-westward of the village of Golfe Juan (*Lat.* $43^{\circ} 34' N.$,
15 *Long.* $7^{\circ} 05' E.$).

The village of Juan-Les-Pins lies on the eastern side of the head of the gulf, about $1\frac{1}{2}$ miles northward of Pointe de l'Îlette. Prominent in the village is Hôtel Provençal, a large white building on an eminence close to the village church and, close to the beach at the western end
20 of the village, and about one mile eastward of the village of Golfe Juan, is a villa built in the Moorish style with a white minaret, which is also prominent.

The eastern shore of the gulf is dominated by La Garoupe, the summit of which lies about one mile east-south-eastward of the village
25 of Juan-Les-Pins and is crowned by the chapel of Notre Dame d'Antibes.

A light is exhibited, at an elevation of 338 feet (103^m0), from a white square tower, 69 feet (21^m0) in height, situated on La Garoupe. A radiobeacon transmits from the light-structure. La Garoupe signal station is situated close to the light-structure.

30 Tour Graillon, a circular tower, 39 feet (11^m9) in height, stands close within the eastern shore of the gulf, about $4\frac{1}{2}$ cables north-north-westward of Pointe de l'Îlette, with the extensive building of Hôtel du Cap about one cable south-eastward of it.

A light is exhibited at an elevation of 119 feet (36^m3) from Tour
35 Graillon.

Currents.—In the approaches to Golfe Juan, the currents are weak and variable, and generally follow the direction of the wind.

Dangers.—Light.—Buoys.—La Fourmigue, a group of low, dark rocks, lies nearly in the middle of Golfe Juan, about $1\frac{1}{2}$ miles north-
40 north-eastward of Île de la Tradelière ; a rocky bank on which the depths are less than 10 fathoms (18^m3) extends about one mile east-north-eastward from La Fourmigue.

A light is exhibited at an elevation of 56 feet (17^m1) from a black tower 44 feet (13^m4) in height, surmounted by a black cone, situated
45 on the highest rock of La Fourmigue.

Basses de la Fourmigue, a number of rocky patches with depths of from $2\frac{1}{2}$ to 5 fathoms (5^m0 to 9^m1) over them, lie on the rocky bank within about 8 cables eastward of La Fourmigue light-structure ; Le Sécanion, the easternmost of these patches, with a depth of $2\frac{1}{2}$ fathoms
50 (5^m0) over it, lies on the alignment of Pointe Croisette and La Fourmigue light-structure, about three-quarters of a mile eastward of the latter. A red can buoy, surmounted by a red cylinder, is moored close northward of Le Sécanion.

Basses de la Fourmigue are covered by the *red* sector of Vallauris

Chart 2822.

light between the bearings of 309° and 336° , and by the *red* sector of Pointe de l'Ilette light between the bearings of 070° and 090° .

Sèche de Saint Pierre, also called Plateau de la Garoupe, a rocky bank with a least depth of $2\frac{1}{2}$ fathoms (5^m0) over it, lies with its shoalest head about a quarter of a mile south-south-eastward of Pointe de l'Ilette light-structure and $1\frac{1}{2}$ cables offshore. It is covered by the *green* sector of Vallauris light, bearing less than 305° , but lies in a *white* sector of Pointe de l'Ilette light between the bearings of 270° and 045° .

The shores of Golfe Juan are fronted by a bank on which the depths are less than 3 fathoms (5^m5) which in places extends as much as $4\frac{1}{2}$ cables offshore; Le Rascoui, a rock with a depth of 3 feet (0^m9) over it, lies on the bank about $1\frac{1}{2}$ cables westward of Pointe de l'Ilette light-structure, and Sèche de la Verne (*Lat.* $43^{\circ} 34' N.$, *Long.* $7^{\circ} 06' E.$), on which there is a depth of one fathom (1^m8), lies near the edge of the bank, about one mile westward of La Garoupe light-structure and about 3 cables offshore. A black, conical buoy, surmounted by a black cone, is moored about $3\frac{1}{2}$ cables south-westward of Sèche de la Verne.

Le Lampadour, a detached $2\frac{1}{2}$ -fathom (4^m1) rocky patch, lies about 2 cables westward of Tour Graillon and about one cable offshore.

Channels.—Directions.—There are two channels into Golfe Juan, Passe de l'Ouest, between Île Sainte Marguerite and La Fourmigue, and Passe de l'Est, between Le Sécanion and Pointe de l'Ilette; the former channel is about one mile wide with depths of over 10 fathoms (18^m3) and the latter channel, about 6 cables wide with depths of from 7 to 26 fathoms (12^m8 to 47^m5).

Vessels from westward using Passe de l'Ouest should pass at least one mile off Île Saint Honorat, giving Tourelle des Moines a berth of at least 2 cables. Île de la Tradelière may be passed close-to and course should then be shaped to keep Vallauris light-structure bearing 345° , which leads westward of La Fourmigue. In foggy weather, Îles de Lérins should be given a wide berth on account of the currents.

At night, as Île de la Tradelière is low and not easily distinguished, vessels should give Îles de Lérins a wide berth and should shape course so as to sight La Garoupe light bearing less than 039° ; when sighted, it should be kept bearing less than 039° until in the *white* sector of Vallauris light between the bearings of 336° and 343° , when the latter light should be kept bearing 341° , until the vessel has entered the *white* sector of Pointe de l'Ilette light with the light bearing more than 090° .

Vessels from eastward using Passe de l'Est should give Pointe de l'Ilette and the coast of Cap d'Antibes a berth of at least 2 cables. To avoid Sèche de Saint Pierre, vessels should keep Cap Ferrat light-structure (page 152) or Montagne de la Tête de Chien (page 157) bearing less than 047° astern, and open south-eastward of the south-eastern extremity of Cap d'Antibes, until Tour Graillon bears more than 350° and is well open westward of Pointe de l'Ilette light-structure; course may then be shaped for the large yellow house north-eastward of the village of Golfe Juan, passing north-eastward of Le Sécanion.

At night, vessels should approach Passe de l'Est in the *white* sector of Vallauris light, between the bearings of 305° and 309° , keeping the light bearing about 307° until Pointe de l'Ilette light bears more than 090° .

Charts 2609, 1780, 160, 2158a, 449.

Chart 2822.

In calm weather, vessels drawing less than 16½ feet (5^m0) may pass between La Fourmigue and Le Sécanion (*Lat.* 43° 32' N., *Long.* 7° 06' E.), the least depth in the fairway being 3½ fathoms (5^m9), situated about 4 cables eastward of La Formigue light-structure.

Anchorage.—Buoys.—Golfe Juan is one of the best roadsteads on this part of the coast. The anchorage extends eastward of a line joining La Fourmigue light-structure and the large yellow building north-eastward of the village of Golfe Juan. It is sheltered from north-westerly winds and with strong south-south-easterly winds the sea, although considerable, is not dangerous to well-found vessels.

Large vessels anchor in depths of from 7 to 10 fathoms (12^m8 to 18^m3), midway between La Fourmigue light-structure and the large yellow building, with the light-structure in line with the eastern extremity of Île Sainte Marguerite, bearing about 202°, and La Garoupe light-structure bearing between 065° and 071°. Small vessels anchor farther northward, in depths of from 5½ to 6½ fathoms (10^m1 to 11^m9), with the large yellow building bearing between 315° and 327° and La Garoupe light-structure bearing about 080°, but always less than 090°.

Mouillage du Piton is situated north-westward of Tour Graillon, with depths of from 8 to 9 fathoms (14^m6 to 16^m5), soft mud and weed; it is well sheltered from eastward but is exposed to southerly winds. Six buoys, painted in red and white, are normally moored on the eastern side of this anchorage to mark the edge of the 16½-foot (5^m0) contour line; in 1949, these buoys were not in place.

Port du Golfe Juan.—Light.—Port facilities.—Port du Golfe Juan, abreast the village of that name, is a small harbour formed by two jetties which shelter it from winds from south through west and north to north-east; it can accommodate vessels of a draught not exceeding 10 feet (3^m0).

A light is exhibited, at an elevation of 30 feet (9^m1), from a red iron column, 19 feet (5^m8) in height, situated on the head of the southern jetty.

Water is laid on to the quays at Port du Golfe Juan and water may also be obtained at Le Croton, situated on the eastern shore of the gulf, about 7 cables northward of Tour Graillon, where two jetties form a small harbour which is accessible only to small boats.

The proximity of the towns of Cannes and Antibes enables supplies of all kinds to be obtained in the village of Golfe Juan at short notice.

*40 Chart 2609.***COAST.—Cap d'Antibes to the Italian frontier.—Aspect.**

From seaward, the coast between Cap d'Antibes and Cap Ferrat, about 11 miles north-eastward, appears of little elevation. The Alpes Maritimes, of which the most prominent peaks are Mont du Cheiron and La Chains, *see* chart 1780, situated respectively about 17 miles northward and 24 miles north-westward of Cap d'Antibes, recede farther and farther from the coast. Eastward of Cap Ferrat, the coast becomes more elevated and is backed by Mont Viso and the snow-clad peaks of the Alps.

The most prominent landmarks, from west to east, are:—The rugged rocks of Gourdon and Saint Jeannet, 2,900 and 2,628 feet (883^m9 and 801^m0) high respectively, the former situated about 14 miles north-westward of Cap d'Antibes and the latter about 13 miles

Charts 2609, 1780, 160, 2158a, 449.

Chart 2609.

northward of that cape and on the western side of Rivière Var ; the two peaks of Mont Chauve (*Lat.* 43° 46' N., *Long.* 7° 16' E.), the higher of which is 2,802 feet (854^m0) high and situated about 7 miles north-north-westward of Cap Ferrat ; Table de Monaco or Mont Agel, 3,766 feet (1,148^m0) high, a flat and level mountain, situated about 2 miles northward of Monaco (page 157) ; Aiguille de Menton or Mont Baudon, 4,157 feet (1,267^m0) high, situated about 2½ miles farther northward ; Roc d'Orméa, which forms two peaks of equal elevation northward of Menton ; and Mont Grammondo, 4,518 feet (1,377^m1) high, situated about 4½ miles north-north-eastward of Menton (page 159). See view on chart 2609.

In foggy weather, vessels should sound constantly and should be prepared to anchor if the depths shoal to less than 17 fathoms (31^m1). Off the mouth of Le Var (page 151), there are depths of 55 fathoms (100^m1) half a mile offshore, decreasing suddenly to depths of less than 5½ fathoms (10^m1) ; the vicinity of the river mouth is indicated by the dirty colour of the sea, caused by the deposit brought down by the river.

*Chart 2822.***Pointe de l'Ilette to Pointe Bacon.—Dangers.—Anchorage.—**

Cap d'Antibes is the southern extremity of the eastern part of the peninsula which separates Golfe Juan from Baie des Anges. It is low and overlooked by La Garoupe which, with a chapel, signal station and light-structure on its summit, is visible from some distance seaward. This cape is separated from Pointe de l'Ilette by Anse de l'Argent Faux (Cour Patassière).

From Cap d'Antibes, the coast trends north-eastward for about three-quarters of a mile to Cap Gros and thence turns northward for about one mile to Pointe Bacon, receding between the two latter points to form Anse de la Garoupe. A 2½-fathom (4^m6) patch lies close eastward of Cap Gros and a rocky bank on which the depths are less than 3 fathoms (5^m5) extends about 2½ cables north-north-eastward from Pointe Bacon ; La Grenille, a rocky reef, parts of which are above water, lies on the outer part of the bank. Le Pilon, a rock with a depth of 6½ fathoms (11^m9) over it, lies about 1½ cables east-south-eastward, and La Péquerolle, a rocky patch with a least depth of 7 fathoms (12^m8) over it, lies about 3½ cables east-south-eastward, of Pointe Bacon.

Fonds de Roche de l'Arens, with a least depth of 24 fathoms (43^m9) and Le Raventurier, with a least depth of 17 fathoms (31^m1), are two banks lying about 7 cables south-eastward, and 8 cables eastward, respectively, of Cap Gros.

Anchorage may be obtained in Anse de la Garoupe, in depths of from 10 to 11 fathoms (18^m3 to 20^m1), sand and weed, good holding ground, south-eastward of La Garoupe light-structure and close to the western shore of the cove. There is a small jetty on the southern side of the bay which affords shelter to fishing boats.

Prohibited anchorage.—On account of unexploded sunken mines, anchoring and fishing are prohibited in a circular area of about 2½ cables radius, the centre of which lies about 8 cables 054° from La Garoupe signal station.

Anse de la Salis.—Dangers.—Anchorage.—Anse de la Salis is entered between Pointe Bacon and Bastion de Cinq Cents Francs

Charts 2609, 1780, 160, 2158a, 449.

Chart 2822.

(*Lat. 43° 35' N., Long. 7° 08' E.*), about one mile north-north-westward ; its shores are fronted by a rocky bank extending as much as 2 cables offshore in places. Le Clapier, a rock with a depth of $3\frac{1}{2}$ fathoms (5^m9) over it, lies about $1\frac{1}{2}$ cables north-eastward of Pointe Grenille, a point situated about $3\frac{1}{2}$ cables westward of Pointe Bacon. Petite Grenille, a low above-water rock, lies about $1\frac{1}{2}$ cables northward of Pointe Grenille and a rocky 2-fathom (3^m7) patch lies about half a cable farther northward.

10 There is anchorage in Anse de la Salis, in depths of from $5\frac{1}{2}$ to 11 fathoms (10^m1 to 20^m1), sand and mud, under the shelter of the western shore. A good berth is eastward of the town of Antibes, with the eastern extremity of Fort Carré, *see* below, bearing about 349° and just open eastward of Bastion des Cinq Cents Francs.

15 **Anse de Saint Roch.—Dangers.—Buoys.**—Anse de Saint Roch is a small bay entered between Bastion des Cinq Cents Francs and Pointe du Fort Carré, a point on which is a fort of the same name, about 3 cables northward. There are depths of from a quarter of a fathom to $2\frac{1}{4}$ fathoms (0^m5 to 4^m1) within the bay and at its head are some
20 fuel oil tanks. There is a seaplane base in the southern part of Anse de Saint Roch. The town of Antibes is situated on the promontory separating Anse de Saint Roch and Anse de la Salis ; it is surrounded by fortifications and is flanked by two large square towers. A small artificial harbour has been formed on the southern shore of Anse de
25 Saint Roch.

Sèche des Cinq Cents Francs, a bank on which the depths are less than 3 fathoms (5^m5), extends about $1\frac{1}{2}$ cables north-north-eastward of Bastion des Cinq Cents Francs ; a cylindrical buoy, painted red and surmounted by a red cylinder, is moored close northward of the
30 extremity of the bank but is liable to be washed away.

Pointe du Fort Carré and the coast close south-westward of the point are fringed by a rocky bank on which the depths are less than $16\frac{1}{2}$ feet (5^m0), which extends about half a cable offshore ; three white buoys mark the edge of this bank off the northern side of Anse de
35 Saint Roch.

Anchorage. — Submarine Cable. — Prohibited anchorage. — Vessels may obtain anchorage off Anse de Saint Roch, northward or north-eastward of the buoy marking the extremity of Sèche des Cinq Cents Francs, but the bottom is fine sand and poor holding ground.
40 In 1927, H.M.S. *Bryony* found good anchorage south-eastward of Bastion des Cinq Cents Francs.

Anchorage is prohibited in the vicinity of a submarine cable northward of Fort Carré, the position of which is indicated by pecked lines on chart 2822. The direction of the cable at the point where it enters
45 the water is shown by the alignment of two beacons, each painted in blue and white horizontal bands and surmounted by a white disc.

Port d'Antibes.—Light.—Buoys.—Depths.—Port d'Antibes is protected from eastward by a mole projecting about $1\frac{1}{2}$ cables northward and north-westward, on the elbow of which stands Bastion des
50 Cinq Cents Francs (*Lat. 43° 35' N., Long. 7° 08' E.*) ; a low mole projecting about one cable northward, forms the western side of the harbour. The sea is always calm in the harbour whatever the weather.

A light is exhibited, at an elevation of 51 feet (15^m5), from a white circular tower, 35 feet (10^m7) in height, situated on the head of the
55 eastern mole.

Charts 2609, 1780, 160, 2158a, 449.

Chart 2822.

Two mooring buoys, the outer painted red and the inner white, are moored about a quarter of a cable northward, and half a cable westward, respectively, of the head of the eastern mole.

Vessels of a length of 425 feet (129^m5) and draught not exceeding 16 feet (4^m9) can normally be accommodated in the harbour, but in 1949 a bar in the entrance to the harbour limited access to vessels of a draught not exceeding 13 feet (4^m0).

The inner side of the western mole is faced throughout its length by a cement quay with depths alongside of 18 feet (5^m5). Oil loading and discharging facilities exist at this quay and also at the eastern mole.

Vessels anchor in the middle of the harbour over a bottom of soft mud, and haul their sterns to the eastern mole, alongside which there are depths of 16 feet (4^m9).

Town.—Port facilities.—Pilotage.—The ancient and picturesque town of Antibes lies spread out with its residential suburbs extending westward as far as Juan-Les-Pins. There is a good hospital situated about one mile from the harbour. The offices of the Superintendent of the Port are situated at the south-western corner of the harbour and the Superintendent is also the pilotage authority; pilotage is undertaken by a fishing inspector who will board vessels by motor boat.

A small stock of coal and a moderate stock of liquid fuel is maintained. Water is laid on to the quays and fresh provisions are available.

Repairs to small craft can be undertaken. There is a slipway capable of taking craft up to a maximum of 150 tons and 10 feet (3^m0) draught, situated at Bastion des Cinq Cents Francs.

Directions.—Easterly winds cause a dangerous sea on a bar which extends between the head of the eastern mole of Antibes harbour and the shore of Anse de Saint Roch northward of it.

To clear the rocky bank extending off Pointe du Fort Carré, vessels approaching the harbour should keep the belfry of Notre Dame d'Antibes in the eastern part of the town, bearing about 208° and open south-eastward of Bastion des Cinq Cents Francs, until the small chapel at the head of Anse de Saint Roch is open southward of the rocks at the foot of Fort Carré. Vessels must pass northward of the red buoy marking Sèche des Cinq Cents Francs if it is in position, *see* page 150, and southward of the white buoys off the northern side of Anse de Saint Roch.

Chart 2609.

Baie des Angès. — Life-saving. — Light. — Anchorage. — Baie des Angès is entered between Pointe du Fort Carré and the mouth of Le Var (*Lat.* 43° 40' N., *Long.* 7° 13' E.), a river about 5 miles north-north-eastward. The shores of the bay are low and are composed of a beach of sand or gravel, backed by a range of low hills at a short distance inland. On the slopes of these hills stand three villages; Biot, about 2½ miles north-north-westward of Pointe du Fort Carré; Villeneuve, about 2 miles farther north-north-eastward; and Cagnes, about one mile east-north-eastward of Villeneuve. Villeneuve may be identified by a high tower in the village, and Cagnes, which is built on an eminence, is very prominent from seaward. The village of Cros de Cagnes lies on the coast about one mile south-eastward of Cagnes and about 1½ miles westward of the mouth of Le Var. A pulling lifeboat is stationed at Cros de Cagnes.

The mouth of Le Var may be identified by a large railway bridge

Charts 1780, 160, 2158a, 449.

Chart 2609.

which crosses the river about half a mile within the entrance, and by three factory chimneys which are prominent on the river banks farther inland. Pont du Var airfield, the aerodrome of Nice, is situated on the eastern side of the entrance; a light for the use of aircraft is occasionally exhibited about three-quarters of a mile north-north-eastward of the entrance.

On either side of the river's mouth, the coast projects and is dangerous to approach at night; vessels should keep south-eastward of a line joining Pointe du Fort Carré and Cap Ferrat, *see* below.

There is anchorage off the village of Cros de Cagnes where the holding ground, formed by the deposit brought down by Le Var, is good. Vessels should ascertain the depth before anchoring as there is deep water close inshore in places.

*15. Charts 153, 2609.***NICE AND APPROACHES.—General remarks.—Dangers.—**

From the mouth of Le Var, the coast, which is still composed of a sand or gravel beach, trends about 4 miles east-north-eastward to Le Château, a distinctive wooded hill at the south-eastern end of the town of Nice, and close westward of the entrance to Nice harbour. About 2½ miles north-eastward of the mouth of Le Var is the square belfry of Sainte Hélène, and, on the summit of Mont Gros, about 2 miles north-north-eastward of Le Château, is an observatory with a cupola, which is very prominent from seaward.

25 Chart 153.

The entrance to Nice harbour lies between Le Château and Cap de Nice, about three-quarters of a mile south-eastward; the entrance is difficult to distinguish from an offing, but the head of a mole at the entrance is in line with the observatory on Mont Gros when bearing 012°. Cap de Nice is the south-western extremity of Mont Boron, which overlooks the town of Nice from eastward, and on the summit of which, about one mile northward of Cap de Nice and at an elevation of 721 feet (219^m8), stands Fort de Mont Alban. From this summit, a range of high mountains backs the coast eastward as far as the Italian frontier.

Pointe des Sans Culottes, the south-eastern extremity of Mont Boron, lies about 4 cables eastward of Cap de Nice and forms the western entrance point of Baie de Villefranche (page 154); Pointe Malalongue, the south-western extremity of Cap Ferrat, lies about 11½ cables south-eastward of Pointe des Sans Culottes and is the eastern entrance point of that bay. Near the south-eastern extremity of Cap Ferrat, about 2½ cables east-north-eastward of Pointe Malalongue, is a large hotel which is prominent from seaward.

There are no dangers in the approaches to Nice at a distance of more than one cable offshore. Sèche de Nice, a shoal with a depth of 3 feet (0^m9) over it, lies about three-quarters of a cable offshore southward of Pointe Rouba Capeou (*Lat.* 43° 42' N., *Long.* 7° 17' E.), the southern extremity of Le Château. Cap de Nice and the coast for about 1½ cables north-westward of it are fringed by rocks which extend about half a cable offshore.

Lights.—Signal station.—Cap Ferrat light is exhibited, at an elevation of 230 feet (70^m1), from a black wooden tower, 20 feet (6^m1) in height, situated about half a cable northward of the extremity

Charts 2609, 1780, 160, 2158a, 449.

Chart 153.

of Pointe Malalongue. In 1951, a new lighthouse, immediately northward of the present one, was under construction. Cap Ferrat signal station, painted white and prominent, stands at an elevation of 453 feet (138^m0) on the summit of Cap Ferrat, about 4½ cables northward of Cap Ferrat light-structure. Messages to and from Lloyds can be transmitted through this signal station, *see* page 8. 5

A light is exhibited, at an elevation of 43 feet (13^m1), from a post, the upper part of which is painted black and the lower part white, 20 feet (6^m1) in height, situated on the head of the outer jetty at the entrance to Nice harbour, about 3½ cables east-south-eastward of Pointe Rouba Capeou. 10

Sea level.—There is a tidal range of about one foot (0^m3) along this part of the coast. In Nice harbour, the sea level can vary as much as 3 feet (0^m9), depending on the winds and barometric pressure. The lowest levels occur in February; the level then rises until December after which it falls abruptly. 15

Pilotage.—Pilotage is compulsory for the port of Nice and also in Baie de Villefranche. The limits of the pilotage area are:—On the east, the meridian of Cap Ferrat; on the west, the meridian of 7° 12' 30" E.; and on the south, a line drawn 3 miles offshore. Pilots will board vessels from motor boats. 20

Harbour.—Lights.—Beacon.—Depths.—Nice harbour is protected from south-westward by a jetty which extends about 3 cables south-eastward from the south-eastern side of Le Château; the light-structure on the jetty head is described above. The entrance lies between the head of this jetty and Épi de la Poudrière, a ridge of rocks extending south-westward from the north-eastern side of the harbour to within about half a cable of the jetty head. A light is exhibited from the head of Épi de la Poudrière. 30

The harbour comprises four basins, and vessels up to 410 feet (125^m0) in length and not exceeding 21 feet (6^m4) draught can be accommodated. The quays were extensively damaged during hostilities but in 1949 were all reported to be serviceable.

Avant Port, the outermost basin, is contained between Épi de la Poudrière and Traverse du Commerce, a short mole projecting south-westward from the north-eastern side of the harbour. A ridge of rocks extends about half a cable southward from the root of Traverse du Commerce; its extremity is marked by a red stone beacon tower. Vessels must not remain in Avant Port. A light is exhibited from the head of Traverse du Commerce. 40

Bassin du Commerce, the basin next north-westward of Avant Port, is dredged to a depth of 23 feet (7^m0). Vessels can be accommodated at Quai du Commerce, 643 feet (196^m0) long, on the north-eastern side of the basin and at a quay 410 feet (125^m0) long on the north-western side of Traverse du Commerce; both of these quays have depths alongside of 21 feet (6^m4). 45

A light is exhibited from the head of a short mole which projects southward from the western end of Quai du Commerce and forms the western side of Bassin du Commerce. 50

Bassin des Amiraux, the basin next north-westward of Bassin du Commerce, is dredged to a depth of 23 feet (7^m0). Vessels can be accommodated at Quai Amiral Infernet, 705 feet (214^m9) long, with depths alongside of 21 feet (6^m4), situated on the south-western side of the basin. 55

Charts 2609, 1780, 160, 2158a, 449.

Chart 153.

Bassin Lympia (*Lat. 43° 42' N., Long. 7° 17' E.*), the innermost basin, situated northward of Bassin des Amiraux, is dredged in the middle to a depth of 21 feet (6^m4) and has a total quayage of 1,246 feet (379^m8) with depths alongside of 18 feet (5^m5).

Lights are exhibited from the north-eastern side of the outer jetty abreast the seaward entrance to Bassin du Commerce and Bassin des Amiraux.

Vessels usually anchor and make fast to the quays. Men-of-war usually lie bows southward and stern secured to the northern side of Bassin Lympia at the part of the quay reserved for yachts. Merchant vessels secure alongside the quays; the Corsican mail boats secure and disembark passengers at Quai Papacino, on the western side of Bassin Lympia. South-westerly winds raise a swell in the harbour and it is then advisable to double the hawsers.

Town.—Port facilities.—Radio station.—Nice is a tourist and health resort of world-wide reputation; its population varies greatly with the season but the average population was, in 1948, about 220,000. British consular officers reside at Nice and there is a military section at l'hôpital Pasteur, situated in the town. The Captain of the Port's offices are situated on the east side of Bassin Lympia with the pilotage offices southward of them.

Small stocks of coal and of liquid fuel are maintained.

Water is laid on to all quays and fresh provisions can be obtained. There are several cranes, the largest being of 30 tons capacity; repairs to small craft can be undertaken.

There is regular sea communication with other Mediterranean ports including a weekly service with Corsica.

There is regular air service to all parts from Pont du Var aerodrome, about 3½ miles south-westward of Nice harbour.

There is a radio station at Nice, *see* page 16.

Baie de Villefranche. — Lights. — Dangers. — Beacon. — Baie de Villefranche extends about 1½ miles northward from its entrance between Pointe des Sans Culottes and Pointe Malalougue and affords a safe anchorage to vessels of all sizes. The citadel, a large structure with four bastions, lies on the western side of the bay about one mile north-north-eastward of Pointe des Sans Culottes, and the town of Villefranche is built in an amphitheatre close northward of it. Close south-westward of the citadel is a harbour, sheltered from eastward by Môle de la Darse, which projects about 2 cables eastward and north-eastward; southward of the root of the mole is the quarantine station. There is also a small harbour abreast the southern part of the town of Villefranche, sheltered by Môle de la Santé, which extends about half a cable north-north-eastward from the shore close northward of the citadel.

A light is exhibited, at an elevation of 25 feet (7^m6), from a metal post, 10 feet (3^m0) in height, situated on the head of Môle de la Darse.

A light is exhibited, at an elevation of 33 feet (10^m0), from a white column, 19 feet (5^m8) in height, situated on the head of Môle de la Santé (*Lat. 43° 42' N., Long. 7° 19' E.*).

The eastern side of the bay is rugged and moderately elevated. On the coast about 1½ cables north-north-westward of Cap Ferrat light-structure is a battery, close westward of which is Roche Voët; a beacon, the upper part of which is painted black and the lower part

Chart 153.

white, surmounted by two black cones, points together, stands on Roche Voët.

A bank on which the depths are less than 5 fathoms (9^m1) extends about 2 cables westward and south-westward from Pointe du Rube (Grassuet), a projection on the eastern side of the bay, about half a mile eastward of the head of Môle de la Darse; Roches du Rube, on which the depths are less than 3 fathoms (5^m5), lie on this bank as much as one cable offshore.

Anchorage.—Caution.—Vessels usually anchor off the western 10 side of the bay, from abreast Môle de la Darse to abreast the northern end of the town of Villefranche; the bottom is soft mud covered with weed. Southerly winds send a swell into the head of the bay, causing vessels to roll, but it does not strain the cable.

Mouillage de l'Espalmador lies on the eastern side of the bay, 15 southward of Pointe du Rube; it affords shelter from easterly winds. To avoid the bank extending westward and south-westward of Pointe du Rube, the head of Môle de la Darse should be kept bearing more than 286°. A good anchorage berth is in depths of from 6½ to 8 fathoms (11^m9 to 14^m6), soft mud and weed, westward of Anse Passable, which 20 is situated in the south-eastern corner of Mouillage de l'Espalmador, about 4 cables southward of Pointe du Rube. This anchorage, which is little used, is not tenable during south-westerly winds.

A pinnacle of rock, which rises from 20 to 26 feet (6^m1 to 7^m9) above the surrounding sea bed, stands in depths of about 27 fathoms (49^m4) 25 about 4 cables south-south-eastward of the head of Môle de la Darse, and with the western edge of the front of Villefranche church in line with the eastern extremity of the citadel, bearing 165°. Vessels should avoid anchoring in this vicinity.

Harbour.—Port facilities.—The harbour southward of the citadel 30 is divided into two parts by a small jetty projecting south-eastward from the shore. There are depths of from 20 to 23 feet (6^m1 to 7^m0) in the eastern part of the harbour to within about a dozen yards of this jetty, alongside which vessels disembark passengers. There are depths of from 2½ to 3½ feet (0^m8 to 1^m0) in the small harbour westward 35 of Môle de la Santé.

There is a civil hospital in the town of Villefranche.

The Captain of the Port's offices are situated near the root of Môle de la Darse. Water is laid on to the southern part of Môle de la Darse and can be supplied to ships at anchor by tank vessel. 40

Minor repairs can be undertaken but there are no facilities for handling cargo.

Fresh provisions can be obtained from Nice.

There is a dry dock at the head of the harbour, close to the root of Môle de la Darse; for details, *see* Appendix I, page 519. 45

COAST.—Dangers.—Anchorage.—From Pointe Malalongue, the coast trends eastward for about 2 cables to Pointe Causinière, the south-eastern extremity of Cap Ferrat, and thence trends northward for about 7 cables and eastward for 6½ cables to Pointe Saint Hospice (Lat. 43° 41' N., Long. 7° 21' E.), the eastern extremity of Presqu'île 50 de Saint Hospice, a peninsula which projects from the middle of the eastern side of Cap Ferrat. The southern side of the peninsula is indented by Anse de Lilong and Anse des Fosses, two coves which lie

Chart 153.

about 6 and $4\frac{1}{2}$ cables, respectively, westward of Pointe Saint Hospice and are separated by Pointe de Lilong. Pointe du Colombier, the eastern entrance point of Anse des Fosses, is fronted by a rocky bank
 5 with depths of less than 5 fathoms (9^m1) on it, which extends about three-quarters of a cable southward of the point. A tower and a chapel stand about $1\frac{1}{2}$ cables within the extremity of Pointe Saint Hospice.

Rade de Beaulieu is entered between Pointe Saint Hospice and Cap Roux, about $1\frac{3}{4}$ miles northward; it affords good shelter from westerly
 10 winds and the bottom, of hard mud and weed, is good holding ground. Baie de Saint Hospice, the southern part of Rade de Beaulieu, affords the best anchorage.

Baie de Saint Hospice is entered between Pointe Saint Hospice and Pointe de Romp Tallon, about 9 cables north-westward. This bay is
 15 sheltered from winds and sea from north-north-west, through west to south. During strong easterly and south-easterly winds there is a very heavy sea, but vessels can, however, ride out such weather if anchored close to the northern side of Presqu'île de Saint Hospice. In this part of the bay, the bottom consists of muddy sand and weed
 20 and is very good holding ground.

Vessels may obtain anchorage in Anse de la Scaletta, a cove on the northern side of Presqu'île de Saint Hospice, about 3 cables westward of Pointe Saint Hospice, in depths of from $6\frac{1}{2}$ to 8 fathoms (11^m9 to 14^m6), with the head of the jetty at Port de Saint Jean, *see* below,
 25 bearing about 280° and in line with Pointe de Saint Jean, a point about one cable eastward of it.

Port de Saint Jean.—Light.—Port de Saint Jean is situated at the south-western corner of Baie de Saint Hospice and is accessible to small craft drawing less than 12 feet (3^m7). It is well sheltered from
 30 easterly winds and is protected by a jetty projecting westward and by a small mole projecting north-eastward; the entrance, between the head of the jetty and the head of the mole, is narrow but clear.

A light is exhibited, at an elevation of 24 feet (7^m3), from a white column 19 feet (5^m8) in height, situated on the head of the jetty at
 35 Port de Saint Jean.

During westerly winds vessels must anchor outside the harbour and warp in. A single vessel can secure fore and aft alongside the jetty. During bad southerly weather, when unable to land passengers and mails at Villefranche, vessels anchor in Baie de Saint Hospice and
 40 disembark them at Port de Saint Jean (*Lat. $43^\circ 41' N.$, Long. $7^\circ 20' E.$*).

There are no supplies available at Port de Saint Jean.

Coast.—Dangers.—Light.—Pointe des Fourmis is situated about 4 cables northward of Pointe de Romp Tallon and may be identified by a prominent white house on its south-western extremity. Pointe de
 45 Beaulieu lies about a quarter of a mile farther north-eastward and the town of Beaulieu is situated on the coast between these two points.

Anse de Beaulieu is entered between Pointe de Beaulieu and Cap Roux, about 8 cables north-eastward. Sèche de Beaulieu, a shoal with a least depth of $2\frac{1}{2}$ fathoms (4^m6), rock and weed, over it, lies near the
 50 middle of this bay, with its shoalest head about a quarter of a mile north-eastward of Pointe de Beaulieu.

La Galiote, a rock with a depth of $2\frac{1}{4}$ fathoms (4^m1) over it, lies about three-quarters of a cable southward of Cap Roux.

The small harbour of Beaulieu, in which there are charted depths of

Chart 153.

1½ and 1½ fathoms (2^m3 and 2^m7), is sheltered by a jetty projecting about three-quarters of a cable northward from the coast close westward of Pointe de Beaulieu (*Lat.* 43° 42' N., *Long.* 7° 20' E.), and by a short mole extending eastward from the shore abreast the head of the jetty. 5

A light is exhibited, at an elevation of 30 feet (9^m1), from an iron column, 22 feet (6^m7) in height, situated on the head of the jetty at Beaulieu harbour.

Chart 3220.

Cap Roux to Cap d'Ail.—Danger.—Between Cap Roux and Cap d'Ail, about 2½ miles eastward, the coast is very high. A sugar-loaf hill, about 8 cables north-eastward of Cap Roux, on the summit of which is the village of Eze and close to which is a prominent viaduct, makes a good landmark. Cap d'Ail, a low, bare platform on which is a ruined battery, is the termination of a spur of Mont de la Bataille, 2,060 feet (627^m9) high, situated about 1½ miles northward of the cape; on this spur, about three-quarters of a mile northward of Cap d'Ail, is Tête de Chien, a distinctive rock, 1,880 feet (573^m0) high. 10

A rocky bank on which the depths are less than 5 fathoms (9^m1) extends about 1½ cables southward of Cap d'Ail. Fort Mont Alban, bearing 260° or more, and open southward of a battery on Pointe de Beaulieu, leads clear southward of this bank. 20

Mer d'Eze, entered between Cap Roux and Pointe de Cabuel, about one mile eastward, and Baie de Saint Laurent, entered between Pointe de Cabuel and Pointe Mala, about 6 cables eastward, are bights which are fully open southward. From Pointe Mala, the coast trends eastward for about three-quarters of a mile to Cap d'Ail. 25

Chart 3220, plan of Port Monaco.

Monaco and approaches.—Lights.—From Cap d'Ail, the coast trends about one mile north-eastward to Pointe Saint Martin, forming Baie de Rocco. Anse de Canton, at the northern corner of which is a small harbour protected by a mole, is situated in the northern part of Baie de Rocco, about a quarter of a mile westward of Pointe Saint Martin. 30

The Principality of Monaco may be easily identified by its numerous buildings, which from a distance give it the appearance of a white patch on the coast, and enables vessels approaching from southward to identify this part of the coast, although the neighbouring peaks may be hidden in fog. 35

Rocher de Monaco, about 1½ miles north-eastward of Cap d'Ail, forms a promontory on which the town of Monaco is built; Pointe Saint Martin is its southern, and Pointe Antoine, about three cables farther north-eastward, its eastern, extremity. The Musée Océanographique, a large white building overlooking the sea between these two points, is prominent. 40

The bight containing Port de Monaco is entered between Pointe Antoine and Pointe Focinana, about 3 cables northward; close within the latter point is Monte Carlo casino, with green cupolas and two bell turrets. Port de Monaco is protected naturally from northerly, westerly and southerly winds; it is protected from eastward by Jetée Sud, which projects about one cable northward from Pointe Antoine, and by Jetée Nord, a jetty of about the same length which projects southward from the coast about 1½ cables westward of Pointe Focinana. 50

Charts 3200, 2609, 1780, 160, 2158a, 449.

Chart 3220, plan of Port Monaco.

(*Lat.* 43° 44' N., *Long.* 7° 26' E.) ; the harbour, however, is hardly practicable during easterly winds.

A light is exhibited, at an elevation of 49 feet (14^m9), from an octagonal masonry tower, situated on the head of Jetée Sud.

A light is exhibited, at an elevation of 49 feet (14^m9), from an octagonal masonry tower, situated on the head of Jetée Nord.

Pilotage.—Pilotage and berthing in the harbour are controlled by the Captain of the Port ; pilotage is not compulsory.

10 **Port de Monaco.—Depths.**—The entrance to the harbour is 328 feet (100^m0) wide at the surface and 262 feet (79^m9) at the bottom, and there are depths of from 23 to 26 feet (7^m0 to 7^m9) in the harbour. The southern and northern sides of the harbour are lined by quays which are accessible to vessels not exceeding 460 feet (140^m2) in length
15 and 19 feet (5^m8) in draught. Quai Sud, the quay on the southern side of the harbour, is reserved for merchant vessels, Quai Nord or Quai des États-Unis, on the northern side, accommodates men-of-war and yachts. There are eight mooring buoys, moored in a line about 360 feet (109^m7) from the western side of the harbour, at which vessels of a
20 draught not exceeding 26 feet (7^m9) can be accommodated.

Caution.—In 1949, an obstruction, which is indicated on the chart and which consists of rubble extending from 16 to 20 feet (4^m9 to 6^m1) from the face of Quai Sud, was reported near the middle of this quay. On the northern side of the harbour, one of the piles of Quai Nord
25 extends out under water from the face of the quay ; its position is marked by a red disc.

Port facilities.—The Captain of the Port's office and the International Hydrographic Bureau are situated on the northern side of the harbour. The British Consul at Nice is also responsible for Monaco
30 and there is a hospital in the town.

Small quantities of coal and liquid fuel are maintained.

Water is laid on to the quays, and vessels at Quai Nord can be supplied with electricity and can be connected to the telephone.

There are two small electrical cranes on Quai Sud.

35 Minor repairs to small craft can be undertaken.

Chart 3220.

Coast.—Light.—Signal station.—From Pointe Focinana, the coast trends north-eastward for about one mile to Pointe de la Vieille, and thence trends about 8 cables north-eastward to Pointe Cabbé and
40 about 1½ miles west-south-westward to Cap Martin, forming Baie de Roquebrune. Cap Martin terminates in a low point on which is a large hotel. About 3 cables north-westward of the extremity of the point, Cap Martin signal station and a water tower may be seen emerging from the olives and pine trees which cover the point.

45 Cap Martin light is exhibited, at an elevation of 277 feet (84^m4), from Cap Martin signal station, 46 feet (14^m0) in height. Messages to and from Lloyds can be transmitted through the signal station, *see* page 8.

Baie de Roquebrune.—Dangers.—Anchorage.—Baie de Roquebrune affords anchorage in fine weather. The village of Roquebrune,
50 in which an old square fort is prominent and which is overlooked by a large rock surmounted by a tower, is situated at an elevation of 774 feet (235^m9), about 4 cables north-north-eastward of Pointe Cabbé (*Lat.* 43° 45' N., *Long.* 7° 28' E.).

A flagstaff stands on Pointe Cabbé and several rocks extend south-

Charts 2609, 1780, 160, 2158a, 449.

Chart 3220.

eastward from the point ; the outermost of these rocks, over which there is a depth of one fathom (1^m8), lies about $1\frac{1}{2}$ cables south-eastward of the point. A rock, with a depth of 3 feet (0^m9) over it, lies about $2\frac{3}{4}$ cables south-westward of Pointe Cabbé and about one cable 5 offshore.

Vessels may obtain anchorage northward of a line joining Pointe de la Vieille and Cap Martin ; southward of this line, the bottom is rocky. A good berth is in the middle of the bay, in depths of from 8 to 11 fathoms (14^m6 to 20^m1), sand and weed, with Cap Martin signal 10 station bearing between 090° and 100° and the tower on the large rock near the village of Roquebrune in line with a large white house on the shore at the head of the bay.

Menton and approaches.—Anchorage.—From Cap Martin, the coast trends north-westward for about half a mile, whence a beach 15 named Plage de Menton runs north-eastward for about $1\frac{1}{2}$ miles to a small promontory in an amphitheatre on which is situated the town of Menton (Mentone). From Menton, the coast trends about one mile north-eastward to the mouth of Rivière Saint Louis or Fiume San Luigi, the frontier between France and Italy. 20

The Franco-Italian frontier is indicated by the alignment of two triangular marks. The front mark, point upward, is formed by the roof of a sentry-box on the beach ; the rear mark, point downward, is on a rock close westward of Saint Louis bridge, about one cable northward of the front mark. 25

Anchorage, sheltered from north-westerly and westerly winds, may be obtained off the south-western part of Plage de Menton, in the angle which it forms with the Cap Martin promontory. A good berth is in depths of from $5\frac{1}{2}$ to $6\frac{1}{2}$ fathoms (10^m1 to 11^m9), muddy sand and weed, good holding ground, north-eastward of Cap Martin signal station and 30 about 3 cables eastward of the south-western end of Plage de Menton. Should the wind shift to easterly or southerly, this anchorage becomes dangerous.

During fine weather, vessels may obtain anchorage, in depths of from $5\frac{1}{2}$ to 8 fathoms (10^m1 to 14^m6), fine sand and weed, about 2 cables 35 eastward or south-eastward of the head of the jetty at Port de Menton, see below. Large vessels should anchor farther out, in depths of from 11 to 14 fathoms (20^m1 to 25^m6), and should be ready to weigh should the wind shift eastward or southward. Rocher Castellar, with depths of 10 fathoms (18^m3) over it, situated about 3 cables south-eastward, 40 and the sunken wreck of an aircraft, situated about one cable eastward, of the head of the jetty, should be avoided.

Port de Menton.—Light.—Port facilities.—Port de Menton is sheltered by a jetty which extends about 2 cables north-eastward from the extremity of the promontory on which the town of Menton is built, 45 and on which stands a square tower.

A light is exhibited, at an elevation of 52 feet (15^m8), from a wall at the head of the jetty (*Lat.* $43^\circ 46' N.$, *Long.* $7^\circ 31' E.$).

Owing to deposit brought down by Torrente Roia, about 4 miles eastward, the harbour tends to silt up, and depths of more than 50 3 fathoms (5^m5) cannot be relied on in the eastern part. Vessels usually anchor and secure their sterns to the jetty ; the holding ground is good but the harbour is exposed to easterly winds. In 1949, the enlargement eastward and deepening of Port de Menton was under

Charts 2609, 1780, 160, 2158a, 449.

Chart 3220.

consideration ; at that date, the quays, which were destroyed during hostilities, had not been repaired.

In 1948, the population of Menton was about 23,000. There is a
5 good hospital in the town.

The Captain of the Port's office is situated near the root of the jetty.
Water is laid on to the quays.

Charts 2609, 1780, 160, 2158a, 449.

CHAPTER VI

ISLAND OF CORSICA—WESTERN AND NORTHERN COASTS

CLIMATE AND WEATHER.—See page 27.

Chart 1131.

CORSICA.—General remarks.—The island of Corsica, although separated from Sardinia by a comparatively shallow channel, presents a distinctive appearance on account of its rugged outline. A mountainous ridge rises close southward of Cap Corse, the northern extremity of the island, extends southward along the middle of Presqu'île du Cap Corse and continues southward to Mont San Pietro (*Lat.* $42^{\circ} 24' N.$, *Long.* $9^{\circ} 20' E.$). It then curves westward, and, southward of Golfe de Calvi, situated at the north-western extremity of the island, about 36 miles south-westward of Cap Corse, contains several massive peaks of which the most prominent are Grosso, Padro, Cinto and Paglia Orba. The latter mountain, 8,284 feet (2,525^m0) high, situated about 14 miles south-eastward of the head of Golfe de Calvi, is easily identified by its vertical summit. In clear weather, a vessel north-westward of Corsica may sight Mont Cinto 8,891 feet (2,710^m0) high, situated about 2 miles north-eastward of Mont Paglia Orba, while still in sight of the south coast of France, and Mont Grosso and the neighbouring peaks overlooking Golfe de Calvi are also visible from a great distance.

The main mountain ridge continues south-south-eastward through the centre of the island, where the summits of Monte Rotondo, Monte d'Oro and Mont Renoso, situated about 11, 15 and 21 miles, respectively, south-south-eastward of Mont Paglia Orba, are prominent and are generally snow-clad from about November to April. Southward of Mont Renoso, the ridge approaches the east coast of the island and terminates at Mont Calva, 4,521 feet (1,378^m0) high, situated about 21 miles northward of Cap Pertusato, the southern extremity of the island, and overlooking Porto Vecchio (page 199).

At Mont Calva, Montagnes de Cagna branch south-westward from the main ridge and reach the south coast of the island at Pointe de Roccapina; Mont Ovace, 4,396 feet (1,339^m9) high and the highest peak in this range, is situated about 9 miles north-eastward of Pointe de Roccapina.

The southernmost part of Corsica is less elevated than the remainder of the island, from which it is separated by a valley extending north-eastward between the head of Golfe de Figari (page 189) and Golfe de Porto Vecchio (page 199); the islands in Bonifacio strait as well as the northern part of Sardinia belong geologically to this part.

Charts 1780, 160, 2158a, 449.

*Chart 1131.***Winds and weather.**—*See* page 28.**Currents.**—*See* page 6.

WESTERN COAST.—Anchorage.—There is anchorage on the western side of Corsica in all weathers. At Propriano (page 165), except during winds between west and north; at Ajaccio (page 171); at Sagone (page 173); and for a single small vessel, at Castagna, in Golfe de Porto (page 175).

During south-westerly winds but nothing more northerly, good anchorage may be obtained in Baie de Campo Moro (page 163), but owing to the frequency with which the wind veers, the shelter afforded here is precarious, and should the wind shift north-westward vessels must put to sea. During north-westerly winds, vessels can obtain shelter at Porto Pollo (page 164) where the protection is adequate but the holding ground is not very good; also, where depths permit, in the whole extent of Baie d'Ajaccio and in Baie de Parata (page 167). During easterly winds, anchorage may be obtained in any of the bays on the western coast.

Chart 429.

Pointe Aquila. — Light. — Radiobeacon. — Pointe Aquila (Lat. $41^{\circ} 33' N.$, Long. $8^{\circ} 47' E.$), the south-western extremity of Corsica, is a low point which projects about one cable southward from the foot of Massif de Sénétosa, a headland which rises to an elevation of 423 feet (128^m9), about three-quarters of a mile north-eastward of the point; the headland is covered with brushwood and crowned with a grey tower.

From Pointe Aquila, the coast trends northward for about half a mile to Pointe Sénétosa, the north-western extremity of the headland; this stretch of coast is fringed with rocks, both above-water and sunken, which extend as much as $3\frac{1}{2}$ cables offshore and it should be given a wide berth. Scoglio Blanco (White rock), the outermost visible rock, lies about 3 cables north-westward of Pointe Sénétosa.

Pointe Sénétosa light is exhibited, at an elevation of 230 feet (70^m1), from two white towers, 42 feet (12^m8) in height, joined by a white building, situated about $3\frac{1}{2}$ cables east-north-eastward of Pointe Aquila. A radiobeacon transmits from the light-structure.

Pointe Sénétosa to Pointe de Campo Moro.—Dangers.—Calanque de Conca is entered between Pointe Sénétosa and Pointe d'Eccica, about $1\frac{1}{2}$ miles north-north-westward; Palo d'Eccica, a peak 233 feet (71^m0) high, rises about 3 cables eastward of the extremity of Pointe d'Eccica. Île d'Eccica, a low and bare islet, lies about 4 cables westward of Pointe d'Eccica, and the channel between them is much encumbered with rocks and shoals. Anse de Ferro and Anse d'Arana indent the northern shore of Calanque de Conca, about 3 and 8 cables, respectively, south-eastward of Pointe d'Eccica.

From Pointe d'Eccica, the coast trends north-north-eastward for about $3\frac{1}{2}$ miles to Pointe de Campo Moro, a promontory crowned by a fort in which is a large round tower. Anse d'Agulia is a shallow bight in the southern part of this stretch, about 6 cables north-eastward of Pointe d'Eccica. Pointe Manna Molina and Pointe delli Migini (Scalono point) are projections on the coast about $1\frac{1}{2}$ and $2\frac{1}{2}$ miles, respectively, north-north-eastward of Pointe d'Eccica; on Pointe delli Migini is a vertical rock which resembles a tower.

Charts 1131, 1780, 160, 2158a, 449.

Chart 429.

GOLFE DE VALINCO.—Aspect.—Light.—Golfe de Valinco is entered between Pointe de Campo Moro and Cap Muro, about $8\frac{1}{2}$ miles north-north-westward, and from its entrance the gulf extends about 6 miles east-north-eastward and is surrounded by mountains. It affords good shelter from easterly and southerly winds but is exposed to those between west and north.

About 5 miles north-eastward of the head of the gulf is Furchicchiole, a peak 4,380 feet ($1,335^m$) high, which appears as a level ridge, bare, blackish, and very steep westward. Sommet de Buturetto, 2,854 feet (869^m) high and crowned by a rock resembling a citadel, stands about 2 miles northward of the head of the gulf, overlooking the village of Olmeto, and Sommet de Savaziglia, 2,195 feet (669^m) high, conical and with two peaks, stands about the same distance eastward of the head of the gulf, overlooking the village of Viggianello (*Lat. $41^{\circ} 40' N.$, Long. $8^{\circ} 57' E.$*). On the southern side of the gulf, the peaks in the foreground are, in general, less elevated than those on the northern side.

A light is exhibited, at an elevation of 176 feet (53^m), from a white square tower, 29 feet (8^m) in height, situated on Cap Muro.

Chart 1126, plan of Campo Moro anchorage.

Southern side of Gulf.—Anchorage.—Close eastward of Pointe de Campo Moro the coast recedes and forms Baie de Campo Moro at the head of which is a sandy beach with Campo Moro village close within it; a large modern château with three turrets is situated about $1\frac{1}{2}$ cables south-westward of the village.

Vessels may obtain anchorage northward of the château and about 3 cables from the sandy beach in the position indicated on the plan. This anchorage is sheltered from winds between south-west and west but is untenable during north-westerly winds.

Chart 429.

About 2 miles eastward of Pointe de Campo Moro is Pointe Cardicicani, a point fronted by a group of detached rocks, one of which is white and prominent.

From Pointe Cardicicani, the coast trends eastward for about three-quarters of a mile to the village of Portigliolo, whence a sandy beach named Rizzanèze trends northward for about $1\frac{1}{2}$ miles to Cap Lauroso; Rivière Rizzanèze flows into the sea at the southern end of the sandy beach.

From Cap Lauroso, the coast trends east-north-eastward for about $1\frac{1}{2}$ miles to the head of Golfe de Valinco which consists of a wide sandy beach about 6 cables long, at the northern end of which Rivière Baraci (Boracci) enters the gulf. Port de Propriano, which is situated about 8 cables east-north-eastward of Cap Lauroso, is described on page 164.

Northern side of gulf.—Dangers.—Anchorage.—A bank on which the depths are less than 10 fathoms (18^m) fronts Cap Muro and extends as much as half a mile southward and south-westward of the point and a detached rocky patch with a least depth of 6 fathoms (11^m) over it lies about one mile southward of the cape.

Cap Nero lies about $2\frac{1}{2}$ miles east-south-eastward of Cap Muro; it is formed of high blackish cliffs, close within which is a light-coloured tower which shows up clearly from the surrounding brushwood. About $1\frac{1}{2}$ miles north-eastward of Cap Nero the land rises steeply to Sommet de la Moneta, 1,145 feet (349^m) high.

Charts 429, 1131, 1780, 160, 2158a, 449.

Chart 429.

Baie de Copabia (Cupabia) is entered between Cap Nero and Pointe de Porto Pollo, about $3\frac{1}{2}$ miles east-south-eastward; both entrance points are fringed with rocks and shoals which extend about a quarter
5 of a mile offshore. The eastern shore of the bay is rocky and is overlooked by Tour Capanelle, a tower standing about 2 cables inland and about $1\frac{1}{2}$ miles northward of Pointe de Porto Pollo.

Vessels may obtain anchorage in Baie de Copabia west-north-westward of Tour Capanelle in depths of from $6\frac{1}{2}$ to 8 fathoms (11^m9 to
10 14^m6), sand and weed, about 2 cables offshore. It is reported that this anchorage is well sheltered from winds between west through north to south.

Chart 1126, plan of Porto Pollo anchorage.

From Pointe de Porto Pollo (Lat. $41^\circ 42' N.$, Long. $8^\circ 47' E.$), the
15 coast trends eastward for about half a mile to a point from which a chain of rocks and shoals extends about a similar distance south-south-eastward. About $8\frac{1}{2}$ cables north-eastward of this point is a rocky promontory which forms the north-eastern entrance point of a bight named Porto Pollo. The village of Porto Pollo, in which there is a
20 large and prominent house of several storeys, is situated on the northern shore of the bight, close westward of the rocky promontory.

Vessels may obtain anchorage, in depths of about 11 fathoms (20^m1) in Porto Pollo, in the position indicated on the plan; this anchorage affords shelter from north-westerly winds although the holding ground
25 is not good.

Chart 429.

From the rocky promontory forming the north-eastern entrance point of Porto Pollo, a sandy beach named Plage de Tavarro extends south-eastward for about $1\frac{1}{2}$ miles to Pointe Tavarro, a low point,
30 fringed by rocks. Tour de Tavarro (Bajaccia) stands at an elevation of 194 feet (59^m1), about a quarter of a mile within Plage de Tavarro and about 6 cables northward of Pointe Tavarro. At Pointe Tavarro, the coast becomes rocky and trends east-south-eastward for about $2\frac{1}{2}$ miles to Pointe d'Aglio, on which stands a tower, and thence eastward for
35 about one mile to the mouth of Rivière Baraci, at the northern end of the head of the gulf.

Port de Propriano.—Lights.—Port facilities.—Port de Propriano is a small harbour protected from westward by Rocher Longo jetée, which projects about $1\frac{1}{2}$ cables northward from the coast about
40 three-quarters of a mile eastward of Cap Lauroso, and from northward by Nouvelle jetée, which projects about one cable eastward from a position about half a cable within the extremity of Rocher Longo jetée; with north-westerly winds, a swell enters the harbour.

A light is exhibited, at an elevation of 55 feet (16^m8), from a white
45 circular masonry tower, 48 feet (14^m6) in height, situated at the head of Rocher Longo jetée.

A light is exhibited, at an elevation of 33 feet (10^m1), from a white metal column, 19 feet (5^m8) in height, situated on the head of Nouvelle jetée.

50 The harbour is accessible to vessels not exceeding 328 feet (100^m0) in length and 19 feet (5^m8) in draught; such vessels may secure at a quay situated on the eastern side of the inner part of Rocher Longo jetée, alongside which there are depths of 20 feet (6^m1). Vessels approaching this quay must avoid a sandbank situated about three-

Chart 429.

quarters of a cable north-eastward of it, on which there are depths of $16\frac{1}{2}$ feet (5^m0).

The village of Propriano is situated on the coast close eastward of the harbour; it is dominated by a white square belfry, standing alone on an eminence about 3 cables eastward of the root of Rocher Longo jetée. 5

Fresh provisions are available and, except in summer, fresh water is plentiful in the village.

Minor repairs to small craft can be undertaken. 10

There is sea communication twice weekly with Marseille.

Anchorage.—Pilotage.—Vessels may obtain anchorage, in depths of from $5\frac{1}{2}$ to $6\frac{1}{2}$ fathoms (10^m1 to 11^m9), sand and weed, eastward of the head of Rocher Longo jetée, but this anchorage is exposed to winds between west and north. 15

The western limit of Propriano pilotage area is a line joining Ponte Tavaró (*Lat.* $41^\circ 42' N.$, *Long.* $8^\circ 51' E.$) and Portigliolo; a pilot can be obtained at the harbour offices which are situated close eastward of the root of Rocher Longo jetée.

GOLFE D'AJACCIO.—Aspect.—Golfe d'Ajaccio is entered between Cap Muro and Pointe Parata, about $9\frac{1}{2}$ miles north-north-westward, and the gulf extends north-eastward for about 10 miles from the entrance. The town and harbour of Ajaccio are situated on the northern side at the head of the gulf, about 11 miles north-north-eastward of Cap Muro. 20

On its south-eastern side, the gulf is dominated by Sommet de Cozzonaccio, 3,478 feet ($1,060^m0$) high, situated about 13 miles north-eastward of Cap Muro; on its northern side by Mont de Lisa 2,592 feet (790^m0) high, rocky and characteristic, and Pozzo di Borgo, a conical peak, 2,559 feet (780^m0) high, situated about $4\frac{1}{2}$ and $5\frac{1}{2}$ miles, respectively, north-eastward of Pointe Parata; and at its head, by the reddish and very rugged mass of Aragnasto, 2,913 feet (887^m9) high, and Mont San Pietro 3,973 feet ($1,211^m0$) high, situated about $6\frac{1}{2}$ and $8\frac{1}{2}$ miles, respectively, east-north-eastward of Ajaccio. In the background, the snowy summits of Monte d'Oro and Monte Rotondo may be seen farther north-eastward. On approaching the entrance to the gulf, vessels will identify Îles Sanguinaires, a group extending south-westward of Pointe Parata, with a light-structure, signal station and a square tower on the largest island, and Cap Muro, with a light-structure (page 163) and, on the extremity of the point, a small rectangular stone chapel. 25 30 35 40

Charts 429, 430.

Îles Sanguinaires. — Dangers. — Buoy. — Light. — Signal station.—Îles Sanguinaires, consisting of Grande Sanguinaire and three islets, extend about $1\frac{1}{2}$ miles south-westward of Pointe Parata, from which they are separated by Passe des Sanguinaires. They are connected by rocks, and rocks and shoals extend about a quarter of a mile south-westward of the south-western extremity of Grande Sanguinaire, and about 3 cables south-south-eastward of Pointe du Tabernacle, its south-eastern extremity. Écueil du Tabernacle, a rock with a depth of 10 feet (3^m0) over it, lies about $6\frac{1}{2}$ cables south-eastward of Pointe du Tabernacle; a red buoy, surmounted by a red cylinder, is moored close south-eastward of the rock. 45 50

Charts 1131, 1780, 160, 2158a, 449.

Charts 429, 430.

A light is exhibited, at an elevation of 322 feet (98^m1), from a grey square tower and base, 52 feet (15^m8) in height, situated about 1½ miles south-westward of Pointe Parata on the summit of Grande Sanguinaire, the largest and southernmost of Îles Sanguinaires.

A signal station with which vessels can communicate by means of the International Code of Signals is situated on Grande Sanguinaire, about a quarter of a mile south-westward of the light-structure. Messages can be transmitted through Lloyds from this station, *see* page 8.

Passe des Sanguinaires.—Passe des Sanguinaires is a channel between Îlot Porre, the northernmost of the group, and Pointe Parata ; it is about 2½ cables wide but depths of 2½ fathoms (4^m1) and less extend about 1½ cables northward of the islet. There are depths of 4 fathoms (7^m3) in the northern and deeper part of the channel, and vessels of moderate draught with local knowledge coming from northward or north-westward may use it with advantage by day and in fine weather. Pointe Parata terminates in a rock which is sufficiently steep to permit small vessels to pass close to it. Vessels of moderate size should keep about one-third of the width of the channel from Pointe Parata (*Lat.* 41° 54' N., *Long.* 8° 37' E.).

Chart 429.

South-eastern side of gulf.—Dangers.—Beacon.—From Cap Muro, the coast trends about 6 cables northward to Pointe Guardiola, a point fringed by rocks extending about a quarter of a mile offshore. Sommet Guardiola, 548 feet (167^m0) high, lies about half a mile eastward of Pointe Guardiola, and a pyramid stands on the coast about a quarter of a mile northward of the summit. Tour Muro stands on top of a cliff about 1½ cables eastward of the summit and near it is a house with green shutters.

Close northward of Tour Muro, a rugged point forms the north-western entrance point of Anse de Cacao, a small cove open northward. Between this rugged point and Pointe Castagna about 3 miles north-north-eastward, the rocky and rugged coast forms a bay the shores of which are fringed with rocks extending as much as 3½ cables offshore. Presqu'île de Castagna, a peninsula of which Pointe Castagna is the western extremity, is 299 feet (91^m1) high, and may be identified by the round Tour Castagna on its summit. The village of La Castagna stands on the slope of a hill about 6 cables eastward of Pointe Castagna, and several other villages may be distinguished within the head of the bay between La Castagna and Anse de Cacao.

A rocky shoal with a least depth of 5½ fathoms (10^m1) over it, lies about 1½ miles north-north-eastward of Tour Muro and about three-quarters of a mile offshore.

From the northern extremity of Presqu'île de Castagna, the coast, composed here of high and rocky cliffs, trends about one mile eastward, and thence a similar distance north-north-eastward to Île Piana, a low islet lying close offshore ; Anse de Portigliolo lies at the head of the bight thus formed. Île Piana is connected with the coast by a rocky flat ; a rock with a depth of 14 feet (4^m3) over it, lies about 8 cables south-westward of the islet and about a quarter of a mile offshore.

Between Île Piana and Pointe Sette Nave, about 1½ miles northward, the coast forms a bay the shores of which consist of a series of

Charts 1131, 1780, 160, 2158a, 449.

Chart 429.

beaches separated by rocky cliffs fringed by reefs and shoals extending as much as 3 cables offshore in places. Port de Chiavari lies on the southern, Anse Ottioni on the eastern, and Anse Medea on the northern, side of this bay. Pointe Sette Nave is the western extremity of a peninsula which is fringed by rocks to a distance of $2\frac{1}{4}$ cables offshore in places; Tour Isoella stands at an elevation of 217 feet (66^m1) about 2 cables within the extremity of Pointe Sette Nave. 5

La Campanina, a rock with a depth of one foot (0^m3) over it, lies about half a mile south-westward of Pointe Sette Nave; a circular masonry beacon, 23 feet (7^m0) high, painted in black and red horizontal bands and surmounted by a globe, stands on La Campanina (*Lat.* $41^\circ 51' N.$, *Long.* $8^\circ 44' E.$). 10

Between Pointe Sette Nave and Pointe de Vescovo about $2\frac{1}{4}$ miles north-eastward, the coast forms a bay the eastern side of which consists of a beach fronted by a bank on which the depths are less than 5 fathoms (9^m1), which extends about 3 cables offshore. On the southern shore of the bay about 7 cables eastward of Tour Isoella is a villa with a white tower resembling a lighthouse, and about $1\frac{1}{4}$ miles farther east-north-eastward and near the middle of the head of the bay is a large isolated house, surrounded by trees. 15 20

About half a mile north-eastward of Pointe Sette Nave is a projection close off which is a rocky islet from which rocks extend about one cable northward; Anse Sainte Barbe is entered between these rocks and a rocky ridge about $1\frac{3}{4}$ cables farther eastward which extends about a quarter of a mile offshore. A rock, awash, lies about 3 cables west-north-westward, and a rocky $3\frac{3}{4}$ -fathom (6^m9) patch lies about half a mile east-north-eastward, of the rocky islet. 25

From Pointe de Vescovo, the coast trends northward for about $5\frac{1}{2}$ cables to Pointe de Porticcio, on which stands a chalet with a red roof. A rocky bank on which the depths are less than 5 fathoms (9^m1) fringes Pointe de Porticcio, and Écueil Dorbera, a group of rocks surrounded by shoals, lies on the outer part of the bank, about $3\frac{1}{2}$ cables south-south-westward of Pointe de Porticcio. 30

From Pointe de Porticcio, the coast trends about one mile east-north-eastward whence a sandy beach, named Plage de Capitello, extends about $2\frac{1}{2}$ miles north-north-westward to Pointe d'Aspretto. About $1\frac{1}{4}$ miles north-eastward of Pointe de Porticcio is Tour Capitello, close northward of which Rivière Prunelli flows through the beach into the head of the gulf. Les Scoglietti, a group of rocks, both above water and sunken, extends about $3\frac{1}{4}$ cables southward of Pointe d'Aspretto. 35 40

A light for the use of aircraft is exhibited at Campo del Oro, situated about half a mile within the head of the gulf and about $1\frac{1}{2}$ miles eastward of Pointe d'Aspretto. 45

Charts 429, 430.

Northern side of gulf.—Dangers.—Beacon.—Pointe Parata is the extremity of Presqu'île de Parata, on the summit of which, at an elevation of 190 feet (57^m9), stands Tour Parata. From Pointe Parata the coast, which is rocky and backed by the Saint Antoine ridge, trends east-north-eastward for about 3 miles to Pointe Scudo and thence about $2\frac{1}{2}$ miles eastward to Pointe Maestrello. A house with a square tower, named Barbicaja, stands about half a mile north-eastward of Pointe Scudo and is prominent, and Sommet Scudo, 1,736 feet (529^m1) 50

Charts 1131, 1780, 160, 2158a, 449.

Charts 429, 430.

high and shaped like a mitre, rises about one mile northward of the same point. Chapelle des Grecs stands on the coast about half a mile west-south-westward of Pointe Maestrello.

- 5 Pointe Scudo (*Lat.* $41^{\circ} 54' N.$, *Long.* $8^{\circ} 41' E.$) is fringed by rocks and shoals extending about $1\frac{3}{4}$ cables offshore. La Botte, a rock 13 feet (4^m0) high, lies about 6 cables west-south-westward of Chapelle des Grecs and about $1\frac{3}{4}$ cables offshore with a rock, awash, about one cable south-westward of it. Tourelle de la Guardiola, a red circular
10 masonry tower, 25 feet (7^m6) high and surmounted by a cylinder, stands on a rock about $2\frac{3}{4}$ cables southward of Chapelle des Grecs. Butticino, a rock one foot (0^m3) high, lies about one cable westward, and a $4\frac{1}{4}$ -fathom (7^m8) patch lies about $2\frac{1}{4}$ cables south-south-westward, of Tourelle de la Guardiola.

- 15 *Chart 1126, plan of Bay and Port of Ajaccio.*

Baie d'Ajaccio.—Light.—Aspect.—Pilotage.—Baie d'Ajaccio is entered between a point on which stands a citadel, situated about half a mile east-north-eastward of Pointe Maestrello, and Pointe d'Aspretto, about $1\frac{1}{4}$ miles farther east-north-eastward. From its
20 entrance, the bay extends about one mile north-north-westward to Plage du Cannes at its head, along which runs a railway.

A light is exhibited, at an elevation of 62 feet (18^m9), from a white circular tower, 36 feet (11^m0), in height, situated on the eastern bastion of the citadel.

- 25 On Pointe d'Aspretto are the hangars and workshops of a French naval seaplane base for which a small enclosed harbour has been constructed on the southern side of the point. About $5\frac{1}{4}$ cables northward of the seaplane base are three metal framework pylons, painted in red and white horizontal bands, and two more pylons stand on the
30 eastern shore of the bay, about $2\frac{1}{4}$ cables north-westward of the seaplane base. About 4 cables north-westward of Pointe d'Aspretto is the square building of an old quarantine station and about a quarter of a mile farther north-north-westward, Appontement Saint Joseph, a pier about $1\frac{1}{2}$ cables in length, projects west-south-westward from the
35 eastern shore of the bay near its head.

- The town of Ajaccio lies stretched along the western side of the bay. Behind the town rise the olive-covered slopes of Mont Salaro and on them are several mortuary chapels of which the most distinctive is
40 Chapelle Peraldi, with a Grecian front, situated about $3\frac{1}{4}$ cables northward of Pointe Maestrello. Higher up is a ch  let, painted in several different colours with a large foundation. About $1\frac{1}{4}$ miles northward of Pointe Maestrello and on the opposite side of a valley is Castelluccio penitentiary, which has a clock tower and a belfry over the entrance. About $1\frac{1}{4}$ miles farther northward and overlooking all the neighbour-
45 hood is Pozzo di Borgo, with a ch  teau near its summit and a dome-shaped monument on its southern slope.

Pilotage is compulsory. The limit of the pilotage area is a line joining Tourelle de la Guardiola and Tour Isolella. Pilots will board vessels in the vicinity of this line.

- 50 **Off-lying dangers.—Light.**—A bank on which the depths are less than 5 fathoms (9^m1) extends about $1\frac{3}{4}$ cables southward and $2\frac{1}{4}$ cables south-westward of the citadel; La Citadelle, a rock with a depth of $1\frac{3}{4}$ fathoms (3^m2) over it, lies about 2 cables southward of the citadel and a 2-fathom (3^m7) rocky patch lies about $1\frac{1}{4}$ cables westward of it.

Charts 429, 430, 1131, 1780, 160, 2158a, 449.

Chart 1126, plan of Bay and Port of Ajaccio.

A light is exhibited, at an elevation of 29 feet (8^m8), from a red tower situated on La Citadelle.

Les Scoglietti, a group of rocks fronting Pointe d'Aspretto (*Lat.* 41° 55' N., *Long.* 8° 46' E.), is described on page 167. 5

Port d'Ajaccio. — Lights. — Depths. — Quayage. — The harbour consists of three basins, formed by jetties extending eastward and north-eastward from the western shore of the bay abreast the town, together with Darse d'Aspretto, the small enclosed basin belonging to the naval seaplane base on Pointe d'Aspretto. 10

A light is occasionally exhibited from the head of each of two jetties flanking the entrance to Darse d'Aspretto, situated about three-quarters of a cable, and 1½ cables, respectively, west-south-westward of Pointe d'Aspretto.

Bassin Sud or Bassin de la Ville, the southernmost basin, is sheltered 15 from southward by Jetée de la Citadelle, which projects about 1½ cables north-eastward from the northern side of the citadel. The northern side of this basin is formed by Jetée des Capucins, which projects about one cable eastward from a position about 2½ cables northward of the root of Jetée de la Citadelle. 20

A light is exhibited, at an elevation of 40 feet (12^m2), from a white column, 21 feet (6^m4) in height, situated on the head of Jetée de la Citadelle.

A light is exhibited, at an elevation of 22 feet (6^m7), from a white metal column, 19 feet (5^m8) in height, situated on the head of Jetée 25 des Capucins.

A mole projects about three-quarters of a cable north-westward from the northern side of Jetée de la Citadelle near its root, forming a small harbour for fishing boats on its south-western side. Eastward of the mole, Jetée de la Citadelle is faced with a quay which, in 1949, had 30 depths alongside of about 10 feet (3^m0) for a length of about 426 feet (129^m8). On the western side of the basin, Quai de la République is reserved for merchant vessels and in 1949 had depths alongside of from 18 to 20 feet (5^m5 to 6^m1) for a length of about 500 feet (152^m4); Quai Napoléon, the quay southward of Quai de la République, is reserved 35 for berthing seaplanes. In 1949, there were depths of about 10 feet (3^m0) alongside quays on both the southern and northern sides of Jetée des Capucins. A mooring buoy is moored in the middle of Bassin de la Ville, to assist vessels in turning.

A light is exhibited, at an elevation of 42 feet (12^m8), from the south- 40 eastern corner of the Port offices building, situated close within the middle of Quai de la République.

Bassin Milieu or Bassin des Capucins lies between Jetée des Capucins and Jetée du Margonajo, which projects about 1½ cables east-north-eastward from a position about 3 cables northward of the root of Jetée 45 des Capucins.

A light is exhibited, at an elevation of 22 feet (6^m7), from a white metal column, 19 feet (5^m8) in height, situated on the head of Jetée du Margonajo.

Quai de la Chambre de Commerce, which forms the southern part of 50 the western side of Bassin des Capucins, had in 1948 depths alongside of 15 feet (4^m6) for a length of about 246 feet (75^m0). There is no quay on the southern face of Jetée du Margonajo (*Lat.* 41° 56' N., *Long.* 8° 45' E.).

Chart 1126, plan of Bay and Port of Ajaccio.

Bassin des Cannes lies between Jetée du Margonajo and Appontement de la Base Navale, which projects about $1\frac{1}{2}$ cables south-south-eastward from a position at the head of Baie d'Ajaccio, about $3\frac{1}{2}$ cables north-north-eastward of the head of Jetée du Margonajo. This basin is reserved for French men-of-war, and torpedo craft of 1,500 tons and below anchor in it and secure their sterns to Quai de la Défense Mobile, the quay forming its western side. There are numerous mooring buoys in this basin.

- 10 Both Appontement de la Base Navale and Appontement Saint Joseph, on the eastern side of the bay, are connected by pipeline with a fuel oil depot situated close westward of the root of the former pier; they are reserved for French men-of-war and, except during south-westerly winds when the swell prohibits berthing alongside, vessels as large as cruisers can berth and refuel alongside both piers.

An area on the northern side of Jetée du Margonajo, south-westward of a line drawn in a 301° direction from the head of the jetty, is dangerous to craft drawing more than 4 feet (1^m2); this area is reserved for small naval boats.

- 20 A light for the use of aircraft is exhibited from each of the three pylons situated about $5\frac{1}{2}$ cables northward of the seaplane base on Pointe d'Aspretto.

- Seaplane practice flights.—Signals.**—Seaplanes from the naval base at Pointe d'Aspretto carry out practice flights both by day and at night. Whilst flying is taking place, flags B N of the International Code of Signals will be hoisted at a control tower in the seaplane base and at a flagstaff on the Naval offices building at the root of Jetée du Margonajo. When night practice flights are to take place, the above-mentioned signal will be hoisted at the Citadel about 2 hours before sunset, in addition to Pointe d'Aspretto and the Naval offices building.

During the flights, anchorage is prohibited in the areas reserved for seaplanes taking off and landing, *see* page 171.

- Obstructions.—Prohibited anchorages.**—Obstructions, indicated by pecked lines on the chart, extend about 3 cables north-eastward by the head of Jetée de la Citadelle and about 4 cables south-westward from a point situated on the eastern shore of the bay about $2\frac{1}{2}$ cables north-eastward of the entrance to Darse d'Aspretto. Sunken moorings, indicated by pecked lines on the chart, lie about $2\frac{1}{2}$ and $3\frac{1}{2}$ cables north-north-eastward of the head of Jetée de la Citadelle.
- 40 Anchoring and fishing are prohibited in the vicinity of these obstructions which present no danger to surface navigation.

- On account of various submarine cables, unless otherwise instructed by a pilot, vessels are prohibited from anchoring in an area bounded as follows:—on the west, by the meridian of La Botte, the rock west-south-westward of Chapelle des Grecs; on the south, by the parallel of Tourelle de la Guardiola; on the east, by the meridian of Pointe d'Aspretto; and on the north, by a line joining the entrance points of Baie d'Ajaccio.

- Anchoring and fishing are prohibited in a zone about $1\frac{1}{2}$ cables wide, fronting the coast of the naval seaplane base at Pointe d'Aspretto (*Lat.* $41^\circ 55' N.$, *Long.* $8^\circ 46' E.$) and the breakwater enclosing its harbour. Anchoring and fishing are also prohibited in a small rectangular area close southward of Les Scoglietti, which is indicated by pecked lines on the chart.

Charts 429, 430, 1131, 1780, 160, 2158a, 449.

Chart 1126, plan of Bay and Port of Ajaccio.

During seaplane practice flights, anchorage is prohibited in the following areas which are reserved for seaplanes taking off and landing, see page 170. By day, about three-quarters of a cable on either side of a line drawn in a 180° direction from the extremity of Appontement de la Base Navale for a distance of about $8\frac{3}{4}$ cables; at night, about one cable on either side of a line joining Tourelles de la Citadelle and de la Guardiola and extending about half a mile east-north-eastward of the former and the same distance west-south-westward of the latter. 5 10

Anchorage.—There is good anchorage off Ajaccio, but south-westerly and east-north-easterly winds, if strong, usually cause a moderately rough sea. Mouillage de la Ville lies between Jetée de la Citadelle and Jetée des Capucins and affords anchorage in depths of $16\frac{1}{2}$ feet (5^m0), with a swinging radius of 377 feet (114^m9). Vessels 15 anchor a little northward of the alignment of the principal street which prolongs Cours Grandval eastward, and with the mast of the harbour offices building situated at the root of Jetée du Margonajo, in line with the light-structure on the head of Jetée des Capucins. In normal weather, the anchorage is protected from swell by Jetée de la Citadelle, 20 but during strong south-westerly winds in winter, there is no shelter except close northward of the latter jetty, and, on account of shoals, the space in which vessels can anchor and secure their sterns to this jetty is reduced to a small area.

In February 1951, H.M.S. *Corunna* anchored in Bassin de la Ville 25 with two anchors down and stern secured to Jetée de la Citadelle about 45 feet (13^m7) off the junction between the inner and outer arms of that jetty. Although stated to be the most sheltered berth in the harbour, H.M.S. *Corunna* reported that a pontoon or catamaran was necessary to keep the stern clear of the jetty in case the stern hawsers 30 parted, and that, except in settled weather conditions, anchorage outside the harbour was preferable at that time of the year.

Mouillage des Capucins is the anchorage used by large vessels and lies eastward of Bassin des Capucins; the swell is less felt at this anchorage than at Mouillage de la Ville. Vessels anchor in depths of 35 from 11 to 19 fathoms (20^m1 to 34^m7), mud and very good holding ground.

Mouillage des Cannes lies between Jetée du Margonajo and Appontement de la Base Navale; it is reserved for French men-of-war, and other vessels are prohibited from proceeding north-westward of a line joining 40 the entrance points.

Mouillage d'Aspretto, formerly the quarantine anchorage, lies eastward of Pointe d'Aspretto and Les Scoglietti. Several shoal patches lie southward of the southernmost above-water rocks of Les Scoglietti, and these rocks should be given a berth of at least 2 cables. 45

Chart 429.

Directions.—Vessels entering Golfe d'Ajaccio should pass at least one mile south-westward of the southern extremity of Grande Sanguinaire. At night, it is preferable for vessels to approach the light on Grande Sanguinaire rather than that on Cap Muro. After having 50 passed Les Sanguinaires and the adjacent dangers, vessels should continue to steer eastward until the light on the citadel at Ajaccio is sighted and is bearing less than 053° , whence a course of 067° will lead clear south-eastward of Tourelle de la Guardiola. When La Citadelle

Chart 429.

light bears about 320°, vessels may steer for the light on the head of Jetée du Margonajo.

Chart 1126, plan of Bay and Port of Ajaccia.

- 5 **Town.—Port facilities.**—Ajaccio, the capital of Corsica, had in 1948 a population of about 26,000. The offices of the French naval authorities are situated at the root of Jetée du Margonajo (*Lat.* 41° 56' N., *Long.* 8° 44' E.) and the Harbourmaster's offices are near the middle of Quai de la République. British consular
10 officers reside in the town.

Stocks of fuel oil are maintained by the French naval authorities.

Water is laid on to the quays but is limited in quantity and of mediocre quality.

- Ajaccio is connected with the railway system of Corsica. There is
15 regular sea communication with France and regular air service with Nice, Paris and Algiers.

Life-saving.—A motor lifeboat is stationed at Ajaccio, *see* page 12.

Climatic table.—*See* page 40.

Charts 429, 430.

- 20 **COAST.—Dangers.**—From Pointe Parata, the coast trends about 4½ miles northward to Cap de Feno. Pointe de la Corba, situated about 8½ cables northward of Pointe Parata, is fringed by rocky islets and a 7-foot (2^m1) rocky patch lies about 2 cables offshore. The coast here is rocky and moderately high, but at Anse de Minaccia, about
25 1½ miles farther northward, decreases in elevation to Plage de Minaccia, a sandy beach about half a mile in length. La Botte, a rock about 72 feet (21^m9) high, lies about 8 cables westward of the northern entrance point of Anse de Minaccia and about 1½ miles southward of Cap de Feno. Écueil de Fico, a one-fathom (1^m8) rocky patch, lies
30 about half a mile northward of La Botte and about 3 cables west-south-westward of the northern entrance point of Anse de Fico, a small cove; a 4½-fathom (7^m8) patch lies midway between Écueil de Fico and the coast.

- Cap de Feno is composed of steep cliffs; Tour de Feno stands, at an
35 elevation of 223 feet (68^m0), about one cable eastward of the point.

Chart 1131.

- CAP DE FENO TO CAP CAVALLO.—Aspect.**—Between Cap de Feno and Cap Cavallo, about 33½ miles northward, the coast forms numerous bays separated by rocky points, *see* view facing page 174.
40 There are no dangers on this stretch outside a distance of half a mile offshore, but the anchorages are generally insecure, the least precarious being in Baie de Sagone, on the northern side of Golfe de Sagone.

- Golfe de Sagone, situated about 6 miles north-eastward of Cap de
45 Feno, is overlooked by Monte Rotondo, 8,612 feet (2,624^m9) high, situated about 15 miles east-north-eastward of the head of the gulf. Golfe de Porto, about 18 miles northward of Cap de Feno, is overlooked by Paglia Orba, with a very steep summit, situated about 9 miles east-north-eastward of the head of the latter gulf, and by the conical
50 Monte Cinto, about 2 miles farther north-eastward.

Between Pointe de Cargèse, situated about 10 miles northward of Cap de Feno, and Cap Rosso, about 6½ miles farther north-north-

Charts 1131, 1780, 160, 2158a, 449.

Chart 1131.

westward, the coast is dominated by Mont Vitullo, 4,370 feet (1,332^m0) high, formed by a rocky hill in the shape of a Phrygian cap and situated about 7 miles eastward of Cap Rosso.

About 7 miles northward of the head of Golfe de Porto, the isolated summit of Capo Tondo, 2,756 feet (840^m0) high, overlooks Golfe de Galeria, about 2 miles farther north-north-westward, and about 6 miles eastward of the head of the latter gulf is Capo di Vegno, 4,557 feet (1,389^m0) high, which appears conical when viewed from northward, but resembles a nipple when seen from south-westward.

Chart 430.

Golfe de Lava.—Dangers.—Golfe de Lava is entered between Cap de Feno (*Lat.* 41° 58' N., *Long.* 8° 36' E.) and Pointe Parragiola, about 3½ miles north-eastward. There are two rocky islets situated off the southern shore of the gulf, Pietra Piombata, situated about 1½ miles north-eastward of Cap de Feno and about 3½ cables offshore, and La Figiera, situated close offshore about one mile farther east-south-eastward. Sunken rocks lie about one and 2 cables southward of Pietra Piombata, and rocks, both above-water and sunken, extend about 1½ cables northward of Pointe de Pietra Rossa, a point on the southern shore of the gulf close south-westward of La Figiera.

Golfe de Sagone.—Aspect.—Golfe de Sagone is entered between Pointe Parragiola and Pointe Puntiglione about 6 miles northward; it extends to Baie de la Liscia at its south-eastern corner, about 4½ miles north-eastward of Pointe Parragiola, and to Baie de Sagone at its north-eastern corner, about 1½ miles eastward of Pointe Puntiglione.

The gulf is surrounded by mountains and hills of varying elevation. On the south-eastern side are Mont Saint Angelo, 1,142 feet (348^m1) high, Sommet Al Monte, 1,434 feet (437^m1) high, and Sommet Vida, 1,522 feet (463^m9) high, situated 1½, 3 and 3½ miles, respectively, east-north-eastward of Pointe Parragiola. In the valley of La Liscia, a river which enters the head of the bay of that name about 1½ miles north-north-eastward of Sommet Vida, a belfry at Saint André and a distinctive double belfry at Sari, situated about 1½ and 4 miles, respectively, above the river mouth, may be distinguished, while about 2 miles eastward of Sari the summit of Mont San Sistro, 2,749 feet (838^m0) high, will be seen. Farther northward, overlooking Baie de Sagone and situated about 3 miles east-north-eastward of the head of that bay, is Sommet de Saltelle, 3,031 feet (923^m8) high and crowned with a pyramid.

On the northern shore and north-westward of the gulf, the hills in the foreground are less elevated than those on the southern side, and in the background, the heights overlooking Golfe de Porto can be seen.

South-eastern side of gulf.—Dangers.—From Pointe Parragiola, the coast trends north-eastward for about 1½ miles to Pointe Castellaccio and thence east-north-eastward for about one mile to Pointe Paliagi. A rocky bank, extending about 1½ cables offshore, fringes Pointe Paliagi, whence the coast trends east-north-eastward for about 1½ miles to Pointe Palmentojo, a point from which rocks, both above-water and sunken, extend about 3 cables westward.

Récif de Paliagi, a reef with a least depth of 3 feet (0^m9), rock, over it, lies between half and three-quarters of a mile north-north-eastward of Pointe Paliagi.

Charts 1131, 1780, 160, 2158a, 449.

Chart 430.

Head of gulf.—Dangers.—Baie de la Liscia is entered between Pointe Palmentojo and Pointe de Capigliolo (Locca), about $1\frac{1}{2}$ miles northward; rocks, above-water and sunken, extend about 2 cables westward of the latter point and Tour de Capigliolo stands on a hillside about 2 cables east-north-eastward of its extremity with an old tower a little higher up the hill. At the head of the bay, about $1\frac{1}{2}$ miles eastward of Pointe de Capigliolo, is a rocky eminence named Castello Capraja, at the foot of which is a house.

- 10 Between Pointe de Capigliolo and Pointe Saint Joseph, about $1\frac{1}{2}$ miles north-north-westward, the head of the gulf is formed by a sandy beach named Plage Liamone; a rock with a depth of less than 6 feet (1^m8) over it, lies about a quarter of a mile off the middle of the sandy beach, about $8\frac{1}{2}$ cables north-north-westward of Pointe de Capigliolo (*Lat.*
15 $42^\circ 04' N.$, *Long.* $8^\circ 43' E.$).

A rocky bank on which the depths are less than 5 fathoms (9^m1) extends about 3 cables south-westward from Pointe Saint Joseph; Récif de Saint Joseph, a reef on which the depths are less than 5 fathoms (9^m1) and on which is a rock, 3 feet (0^m9) high, lies between 4 and
20 9 cables south-westward of Pointe Saint Joseph. From this latter point, the head of the gulf trends northward for about $1\frac{1}{2}$ miles to the eastern entrance point of Baie de Sagone.

Northern side of gulf.—Dangers.—Anchorage.—Pointe Puntiglione, the northern entrance point of Golfe de Sagone, is fronted by
25 a rocky bank on which the depths are less than 5 fathoms (9^m1) which extends about 3 cables south-south-westward of the point; Plateau de Puntiglione, a bank on which there are depths of 10 fathoms (18^m3), and less, extends about 6 cables farther south-south-westward. From Pointe Puntiglione, the coast trends eastward for about one mile to
30 Pointe de la Batterie.

Baie de Sagone is entered between Pointe de la Batterie and a point about one mile eastward, and extends about 6 cables northward from the entrance. The village of Sagone stands at the north-eastern corner of the bay.

- 35 There is anchorage in Baie de Sagone, in depths of from $6\frac{1}{2}$ to 7 fathoms (11^m9 to 12^m8), sand and mud, about $1\frac{1}{2}$ cables offshore in the position indicated on the chart. Small craft anchor about half a cable offshore. The anchorage is sheltered from westward by Pointe de la Batterie, but the shelter from south-westerly winds is precarious.
40 A landing stage, with depths alongside of 16 feet (4^m9), is situated on the western side of the bay about $1\frac{1}{2}$ cables north-north-eastward of a tower; a smaller landing stage for fishing boats is situated on the opposite side of the bay, about one cable southward of the village of Sagone.

45 **Pointe Puntiglione to Cap Rosso.—Coast.—Off-lying danger.**—From Pointe Puntiglione, the coast trends west-north-westward for about 4 miles to Pointe de Cargèse; Pointe de Cappicciolo (Moines point), about $1\frac{1}{2}$ miles north-westward of Pointe Puntiglione, and Pointe Molendino, about half a mile farther west-north-westward, are
50 two projections on this stretch of coast on which a bridge at Stagnoli, about three-quarters of a mile eastward of Pointe de Cappicciolo, is prominent from seaward. The village of Cargèse lies in an amphitheatre about three-quarters of a mile north-eastward of Pointe de Cargèse; there are two belfries in the village and a ruined tower stands

Charts 1131, 1780, 160, 2158a, 449.

To face page 174.

a



Ile de Gargalo.

*Cap Senino.
Golfo de Porto.*

*Cap Rosso, bearing 043°,
distant about 13 miles.*

Pointe de Cargèse.

a

a



Golfo de Sagone.

Cap de Feno.

Iles Sanguinaires.

Cap Muro.

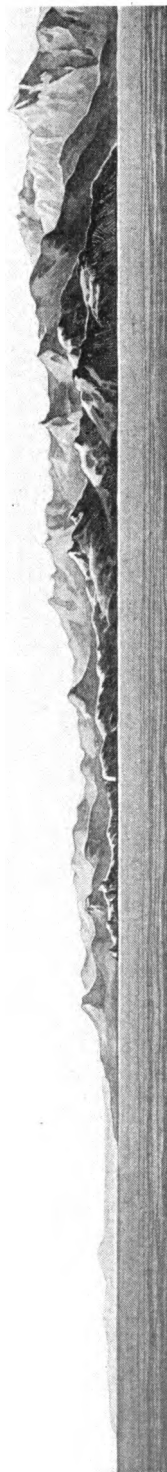
a

View, in two parts, of western coast of Corsica.

(Original dated 1831.)

To face page 175.

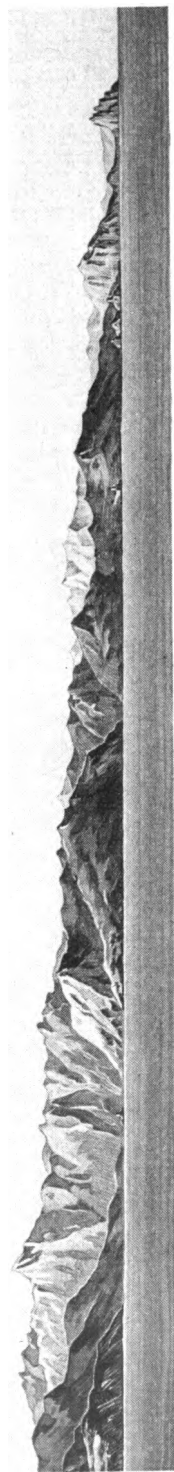
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Pointe Revellata.

Mont Paglia Orba.

a



Mont Paglia Orba.

a

Capo Tonà.

Cap Rosso.

*Ile de Gargalo,
bearing 156° distant
about 12 miles.*

View, in two parts, of north-western coast of Corsica.

(Original dated 1831.)

Chart 430.

on high ground close eastward, with another on the summit of a hill about 2 cables west-south-westward of the village.

Rocher Marevicce (Marifaja), 5 feet (1^m5) high, lies about 6½ cables south-westward of Pointe Molendino; a rock with a depth of less than 6 feet (1^m8) over it lies close east-north-eastward of Rocher Marevicce. 5

Between Pointe de Cargèse and Cap Rosso, about 6½ miles north-north-westward, the coast is indented by several open bights, separated by rocky points. Baie de Pero is entered between Pointe de Cargèse and Pointe d'Omignia, on which stands a tower, about 1½ miles north-westward; a rock, awash, lies about one cable south-westward of the former point and an above-water rock lies close off the latter point. 10

Baie de Chioni is entered between Pointe d'Omignia (*Lat.* 42° 09' N., *Long.* 8° 34' E.) and Pointe d'Orchino, about 1½ miles northward; an above-water rock lies about one cable westward of the latter point and Tour d'Orchino stands at an elevation of 604 feet (184^m1), about three-quarters of a mile east-north-eastward of it. 15

Between Pointe d'Orchino and Pointe Tuselli, about 2 miles northward, the coast forms a bight in the northern corner of which is Anse d'Arone; except at the head of this cove where there is a sandy beach, the shores of the bight consist of blackish cliffs. Rocks extend about 2 cables westward from Pointe Tuselli. 20

From Pointe Tuselli, the coast trends about 9 cables northward to Pointe Lancisca. Anse de Palo is entered between this latter point and a point about three-quarters of a mile farther north-westward. From the north-western entrance point of Anse de Palo, the coast trends west-north-westward for about 3 cables to a point close off which is Rocher Noir. 25

Cap Rosso lies about half a mile north-westward of Rocher Noir; it is comprised of cliffs from which several rocks extend about 1½ cables westward. Tour de Turghio stands on the summit of a red granite cliff, at an elevation of 1,122 feet (342^m0), about 5½ cables eastward of the extremity of the cape. 30

Golfes de Porto and de Girolata.—These two gulfs are entered between Cap Rosso and Pointe Rossa, about 6 miles northward; they are separated by a cliffy promontory formed by Mont Senino, 2,031 feet (619^m0) high, of which Cap Senino is the western and Pointe Scopa the southern extremity. The shores of both these gulfs are steep and free from dangers except close inshore. Golfe de Porto is entered between Cap Rosso and Pointe Scopa. Pointe Palani lies about a mile eastward of Cap Rosso; rocks extend 1½ cables offshore from it, and above it is a granite pinnacle. Pointe Ficajola lies about 2½ miles east-north-eastward of Pointe Palani, and 1¼ miles south-eastward of it the village of Piana on the mountain slopes may be distinguished. Between Pointes Ficajola and Palani several detached dangers lie within 3 cables of the coast. Eastward of Pointe Ficajola the cliffs gradually decrease in elevation. The northern side of Golfe de Porto is very rugged and is formed of steep cliffs. 40

At the head of Golfe de Porto is a rocky promontory which separates the village of Porto from the sea. Tour de Porto stands on the head of the promontory and at its foot there is a shelter for boats, but the so-called Port de Porto is a wharf, situated in Anse de la Castagna, a cove about three-quarters of a mile west-south-westward of Tour de Porto and close eastward of Pointe Cappiciolo. This wharf, which is 50

Charts 1131, 1780, 160, 2158a, 449.

Chart 430.

used by coasters, extends eastward and westward, is paved with red granite, and has depths alongside of $6\frac{1}{2}$ feet (2^m0).

Golfe de Girolata is surrounded by mountains; it is entered between
 5 Cap Senino (*Lat. $42^\circ 19' N.$, Long. $8^\circ 36' E.$*) and Pointe Rossa, about $2\frac{1}{4}$ miles north-westward. It is overlooked southward by Mont Senino and north-westward by Sommet Porcire 1,772 feet (540^m1) high, both of which are very steep. In about the middle of the north-eastern shore of the gulf is Anse de Girolata, on the north-western
 10 entrance point of which is a fort surmounted by a tower.

The shelter in these gulfs is precarious and vessels should only anchor here in fine weather and should be ready to weigh instantly.

Pointe Rossa to Pointe Stollo.—Coast.—Dangers.—A pointed islet lies close westward of Pointe Rossa. From this point, the coast,
 15 which is rugged and consists of high cliffs, dark red in colour, trends northward for about $2\frac{3}{4}$ miles to Pointe Palazzo. This latter point is crowned by a plateau, the striated rocks of which resemble a row of books from which it gets the name of La Bibliothèque. Îlot Palazzo, 190 feet (57^m9) high, lies close north-westward of Pointe Palazzo.
 20 Île de Gargalo is separated by a narrow channel from the coast between a half and three-quarters of a mile southward of Pointe Palazzo. A tower stands at an elevation of 417 feet (127^m1) near the summit of the island, and on a small plateau close north-westward of the tower, is a characteristic helmet-shaped rock, named Le Casque. Îlot Garganello lies close off the southern extremity of Île de Gargalo, about
 25 9 cables south-south-westward of Pointe Palazzo.

Baie d'Elbo is entered between Pointe Palazzo and Pointe Nera, about one mile eastward. La Marine d'Elbo, a sandy beach at the head of a small inlet in the southern shore of the bay, is the centre of
 30 the lobster fishery in Corsica and several fishermen's houses stand on the beach. Between Pointe Nera and Pointe Scandola, about 6 cables east-north-eastward, the coast is steep. Îlot Pori, 102 feet (30^m9) high, lies close north-westward of Pointe Scandola.

From Pointe Scandola the coast trends about $2\frac{3}{4}$ miles north-eastward to Pointe Stollo. Baie de Focolara is entered between Pointe Scandola and Pointe Validori, about $1\frac{1}{4}$ miles north-eastward; its shores consist of high cliffs.

Between Pointe Validori and Pointe Stollo, the coast is dominated by Sommet Mufrareccia, 1,339 feet (408^m1) high, situated about one
 40 mile north-eastward of the former point.

Anse de la Foata is entered between Pointe Validori and Pointe Bianca, about half a mile northward; from the latter point the coast trends north-eastward for about half a mile to a point from which a rocky bank, with depths of 6 fathoms (11^m0) and less on it, extends
 45 about a quarter of a mile northward and north-westward. Les Scoglietti, a group of rocks the highest of which is 14 feet (4^m3) high, lies on the outer part of this bank, about $2\frac{1}{4}$ cables northward of the rocky point. They are surrounded by sunken rocks and, though low, are easily distinguished. A rock, awash, lies about one cable north-eastward, and a 5-fathom (9^m1) rocky patch lies about a quarter of a mile
 50 north-north-westward, of Les Scoglietti.

The north-western extremity of Île de Gargalo, bearing less than 223° and open north-westward of Îlot Palazzo (*Lat. $42^\circ 23' N.$, Long. $8^\circ 33' E.$*), leads north-westward of Les Scoglietti and the surrounding
 55 dangers.

Charts 1131, 1780, 160, 2158a, 449.

Charts 1126, plan of Gulf of Galeria, 430.

Golfe de Galeria.—Anchorage.—Golfe de Galeria is entered between Pointe Stollo and Pointe Ciuttone, about $1\frac{1}{2}$ miles north-eastward ; it is overlooked by the isolated and conical summit of Capo Tondo, 2,756 feet (840^m0) high, situated about $2\frac{1}{2}$ miles south-eastward of Pointe Stollo, which makes identification easy. On the eastern side of the gulf about 2 miles south-eastward of Pointe Ciuttone, the ruins of a tower stand at an elevation of 1,148 feet (349^m9) on Sommet de Margine, and form a prominent landmark. 5

The village of Galeria is situated at the southern corner of the gulf, 10 about $1\frac{1}{2}$ miles east-south-eastward of Pointe Stollo. A rocky bank on which the depths are less than 3 fathoms (5^m5) fronts the shore at the head of the gulf, and extends as much as 3 cables offshore abreast the village. Tour Galeria stands on a low point about 6 cables north-eastward of the village ; close northward of this point, a river named 15 Le Fango enters the gulf. Plage du Fango, a sandy beach backed by a belt of trees, extends about half a mile north-north-eastward from the mouth of the river, whence the coast trends north-north-westward for about one mile, gradually rising to Pointe Ciuttone, an isolated outcrop of red granite which attains an elevation of 656 feet (199^m9) 20 about 4 cables eastward of the extremity of the point ; about half-way up this slope is a stone pyramid.

Golfe de Galeria affords moderately good anchorage in fine weather, in depths of from 8 to 13 fathoms (14^m6 to 23^m9), in the positions indicated on the plan, but the anchorage is untenable with a westerly swell 25 and vessels must be prepared to weigh immediately.

Chart 430.

Baie de Crovani.—Anchorage.—Between Pointe Ciuttone and Cap Martino, about one mile north-eastward, the coast recedes to form an open bight. Baie de Crovani is entered between Cap Martino and 30 Cap de la Morsetta, about $1\frac{1}{2}$ miles north-north-westward ; it is overlooked by Sommet de l'Argentelle, 2,628 feet (801^m0) high, situated about $2\frac{1}{2}$ miles eastward of Cap Martino. Cap de la Morsetta is clifly ; a low islet lies about $1\frac{1}{2}$ cables south-south-westward of the cape and rocks, both above-water and sunken, extend about one cable southward and north-westward of the islet. The head of the bay is formed 35 by a sandy beach, near the southern end of which, the buildings of a factory in the village of l'Argentelle may be distinguished.

Baie de Crovani affords good shelter from all but westerly winds but, when these occur, it is necessary to weigh. Vessels surprised by 40 south-westerly winds at the anchorage off l'Argentelle would be in an awkward position for weighing and, in these circumstances, Golfe de Galeria affords better anchorage.

Chart 1131.

Coast.—Signal station.—Danger.—Between Cap de la Morsetta 45 and Cap Cavallo (*Lat.* 42° 31' N., *Long.* 8° 40' E.), about $2\frac{1}{2}$ miles north-north-eastward, the coast is composed of cliffs. Prominent objects on this stretch are : Sommet Vigatoggio, 850 feet (259^m1) high, situated about three-quarters of a mile north-eastward of Cap de la Morsetta, with a pyramid on its summit and another on its south- 50 western slope ; Tour Truccia, a ruined tower, crowning a bare and pointed peak about one mile farther north-north-eastward ; and Cap Cavallo signal station.

Cap Cavallo signal station stands, at an elevation of 971 feet (296^m0),

Charts 1780, 160, 2158a, 449.

Chart 1131.

on a summit about $3\frac{1}{2}$ cables east-south-eastward of Cap Cavallo. Messages can be transmitted through Lloyds by this station, *see* page 8.

- 5 Banc Cavallo, with depths of from 17 to 27 fathoms (31^m1 to 49^m4) over it, extends as much as $1\frac{3}{4}$ miles north-westward of Cap Cavallo ; in bad weather, there is a very heavy sea on this bank, and vessels should give the cape a berth of at least 3 miles.

- Cap Cavallo to Pointe Revellata.—Aspect.—Light.**—Between
10 Cap Cavallo and Pointe Revellata, about 5 miles north-eastward, the coast is steep and dominated by a range of mountains from 2,300 to 2,600 feet (701^m0 to 792^m5) high, which are connected with Sommet de l'Argentelle. Presqu'île de Revellata, of which Pointe Revellata is the northern extremity, rises to a ridge in which Sommet Belloni, situated
15 about three-quarters of a mile south-westward of Pointe Revellata and surmounted by a black pyramid, is the highest point. The western coast of the peninsula consists of nearly perpendicular cliffs. *See* view facing page 175.

- A light is exhibited, at an elevation of 289 feet (88^m1), from a white
20 square tower, the upper part of which is painted black, 53 feet (16^m1) in height, and fenced with a white wall, situated on Pointe Revellata.
Charts 1126, plan of Calvi gulf, 1131.

- Coast.—Dangers.**—From Cap Cavallo, the coast trends eastward for about $1\frac{1}{2}$ miles to Pointe Cantaleli ; a 4-fathom (7^m3) rocky patch
25 lies about $3\frac{1}{4}$ cables northward of the latter point. Baie de Nichiareto is entered between Pointe Cantaleli and Pointe Guale, about one mile north-eastward ; it is reported to afford good shelter from westerly and south-westerly winds. From Pointe Guale, the coast trends northward for about 2 miles to Pointe Bianca. A rock, 56 feet (17^m1) high, lies
30 about 3 cables south-eastward of Pointe Bianca and two more rocks lie close to the coast eastward of this rock. From Pointe Bianca, the coast trends about $4\frac{1}{2}$ cables northward to Pointe Rossa and thence north-eastward for about 8 cables to Pointe Revellata. A pointed rock lies close north-eastward of Pointe Revellata.
35 *Chart 1126, plan of Calvi gulf.*

- The coast forming the eastern side of Presqu'île de Revellata is less steep than on the western side and rises in a gentle slope. A landing place has been constructed about $1\frac{1}{2}$ cables southward of Pointe Revellata light-structure. Baie de Revellata is entered between
40 Pointe Oscelluccia, a narrow point projecting about $1\frac{3}{4}$ cables from the coast about 7 cables southward of Pointe Revellata, and a rounded point about 6 cables farther south-eastward ; from this rounded point, the coast trends eastward for about three-quarters of a mile to Pointe Saint François (*Lat.* $42^\circ 34' N.$, *Long.* $8^\circ 46' E.$), which is cliffy.

- 45 **Golfe de Calvi.—Aspect.—Light.**—Golfe de Calvi is entered between Pointe Saint François and Pointe Caldano, on which stands a tower, about 2 miles east-north-eastward. Vessels approaching from seaward may identify the gulf by Mont Grosso (page 161), situated about 8 miles south-eastward of Pointe Saint François at the eastern
50 end of the first range of mountains overlooking this region ; by Capo al Dente, situated about 2 miles southward of Mont Grosso and shaped like a tooth ; and by the chapel of Madonna della Serra, which stands at an elevation of 709 feet (216^m1) on a hilltop about $1\frac{1}{2}$ miles south-westward of Pointe François and is prominent. On a closer approach,

Charts 1131, 1780, 160, 2158a, 449.

Chart 1126, plan of Calvi gulf.

the following objects may be identified on opening up the gulf. Maison Renucoli, flanked by two clumps of trees, situated about $1\frac{1}{2}$ miles south-south-eastward of Pointe Sainte François; the railway station of Calenzana-Lumio, at the middle of the head of the gulf, about $1\frac{1}{2}$ miles southward of Pointe Caldano; and Capo di Bestia, 2,635 feet (803^m1) high, about 4 miles south-eastward of Pointe Caldano, the summit of which is flat and very characteristic. About half-way up the western slopes of Capo di Bestia, a road leading to the village of Montemaggiore may be distinguished; this village stands at an elevation of 1,211 feet (369^m1), about $1\frac{1}{2}$ miles southward of the summit of the mountain, and contains a slender belfry, standing on a spur, the southern face of which is perpendicular.

The town of Calvi is divided into two parts. The upper town is built on a rocky point about 3 cables south-eastward of Pointe Saint François; it is surrounded by the walls of a citadel and contains a square belfry. The lower town is situated immediately south-westward of the citadel; it is overlooked by two forts, one of which is surmounted by a white building. In 1949, the population of Calvi was about 2,500. A railway runs along the head of the gulf, which consists of a beach backed by a belt of pine trees. The bridges which carry the line across La Ficarella and Le Secco, two rivers which enter the head of the gulf about $1\frac{1}{2}$ miles east-south-eastward, and $1\frac{1}{2}$ miles eastward, respectively, of the town of Calvi, may be identified from seaward.

A light is exhibited, at an elevation of 97 feet (29^m6), from a white hut, the upper part of which is painted red, 4 feet (1^m2) in height, situated at the foot of the north-eastern angle of the citadel.

Port de Calvi.—Light.—Depths.—Buoy.—Port de Calvi, situated southward and south-eastward of the town, is sheltered from north-westward. A small jetty projects south-south-eastward from the coast close southward of the south-eastern angle of the citadel, and affords partial protection from northerly and north-easterly winds.

A light is exhibited, at an elevation of 33 feet (10^m1), from a white iron column, 5 feet (1^m5) in height, situated on the head of the jetty (Lat. $42^{\circ} 34' N.$, Long. $8^{\circ} 46' E.$).

There are two quays at Port de Calvi: Quai Nord, situated at the base of the southern side of the citadel, is 344 feet (104^m8) long and can accommodate vessels drawing less than 15 feet (4^m6); Quai Ouest, or Quai des Pêcheurs, extends along the sea front of the lower town, but the bottom alongside the face of this quay, and for about 3 feet (0^m9) off it, is foul. There are depths of 2 feet (0^m6) at a distance of 3 feet (0^m9) off the north-eastern part of the quay, and of $6\frac{1}{2}$ feet (2^m0) at a distance of 5 feet (1^m5) off its south-western part, but vessels of a draught exceeding 6 feet (1^m8) should not approach the quay within a distance of 10 feet (3^m0).

A mooring buoy for the use of mail steamers is moored about $1\frac{1}{2}$ cables south-westward of the head of the jetty and about half a cable off Quai Ouest.

Anchorage.—Golfe de Calvi affords good shelter during westerly and south-westerly winds. Northerly and north-easterly winds raise some sea but small craft can then secure alongside Quai Nord. A good anchorage berth is in depths of from 7 to 8 fathoms (12^m8 to 14^m6), sand and weed, southward of the jetty, with a chimney, situated about $4\frac{1}{2}$ cables south-south-westward of the head of the jetty, bearing 227°

Charts 1131, 1780, 160, 2158a, 449.

Chart 1126, plan of Calvi gulf.

and in line with a ruined building on a summit, 272 feet (82^m9) high, about half a mile farther south-westward. In order to obtain the best shelter, small craft should anchor as close as possible to a tower near
 5 a rock which lies in a bight between Quai Nord and Quai Ouest.

Coast.—Dangers.—Beacon.—From Pointe Caldano, the low coast trends northward for about one mile to Pointe de Spano (d'Espano). This stretch of coast is fringed with rocks, and a flat islet, 49 feet (14^m9) high, lies close westward of the latter point; rocks also fringe the islet,
 10 extending as much as 1½ cables south-westward, and one cable northward, of it. Tour de Spano, in ruins, stands about 2½ cables east-north-eastward of Pointe de Spano.

Charts 1126, plan of Algajola bay and rocks, 1131.

From Pointe de Spano, the coast trends east-north-eastward for
 15 about 4 miles to Pointe Vallitoni (Vallitone), a low and rocky point on which is a tower. Pointe Saint Ambrogio lies about 1½ miles eastward of Pointe de Spano, and on the slope of a hill a short distance inland and midway between these points, are two round rocks which, on account of their shape, are called Rocher Eléphant. Pointe Saint
 20 Damiano, low, rocky and situated about 1½ miles east-north-eastward of Pointe Saint Ambrogio, may be identified by some white rocks on it. On the eastern side of the former point is a small harbour, partly sheltered from northerly winds by a jetty, and about half a mile east-south-eastward of the point is the village of Algajola, in which is a
 25 slender white belfry. A wide sandy beach extends about three-quarters of a mile east-north-eastward from this village, and between one and 2 miles inland several villages, at elevations of from 1,500 to 2,000 feet (457^m2 to 609^m6), may be distinguished; prominent among them is the white belfry of the convent of Corbara, situated about
 30 2 miles eastward of Algajola village (*Lat.* 42° 37' N., *Long.* 8° 52' E.).

Écueil de l'Algajola, situated about one mile north-north-westward of Pointe Saint Damiano, consists of a group of rocks, sunken and awash; it is marked by an iron beacon, painted in red and black horizontal bands and surmounted by a globe, but the beacon is difficult to dis-
 35 tinguish. In 1949, this beacon was reported to be destroyed.

The tower on Pointe Vallitoni in line with the light-structure of Grande Île Rousse, *see* below, bearing about 068°, leads between Écueil de l'Algajola and the coast, and the light-structure on the jetty at Île Rousse, bearing about 087° and open northward of Île Siccota,
 40 *see* below, leads northward of this shoal.

At night, Écueil de l'Algajola is covered by a *red* sector of Grande Île Rousse light, bearing less than 079°.

Pointe Vallitoni is fringed by rocks; La Galère, a rock awash, lies about a quarter of a mile north-eastward of the point, which should be
 45 given a berth of at least half a mile.

From Pointe Vallitoni, the coast trends east-north-eastward for about 2 miles and then eastward for about half a mile to the town of Île Rousse. About three-quarters of a mile westward of the town a disused signal station, painted yellow and prominent, stands at an
 50 elevation of 466 feet (142^m0), on the northern slope of a hill.

Charts 1126, plan of Île Rousse, 1131.

Île Rousse.—Aspect.—The group of islands known as Île Rousse consists of four yellowish islands of which the largest, Grande Île Rousse or Île de la Pietra, is connected by a causeway with Île Siccota,

Charts 1131, 1780, 160, 2158a, 449.

Charts 1126, plan of Île Rousse, 1131.

the southernmost island, which in turn is connected by a causeway with the coast close north-westward of the town. The two northern islands lie close northward of the western end of Grande Île Rousse and a rock lies close off its western end. A jetty extends about 1½ cables south-eastward from the causeway connecting Grande Île Rousse and Île Siccota, and, together with the causeway connecting the latter island with the coast, forms Port de l'Île Rousse. 5

Vessels approaching from seaward will identify the conical Sommet d'Orlica, 1,342 feet (409^{m0}) high, situated about 1½ miles south-south-eastward of the town, on the eastern slope of which is the village of Monticello, with the domed chapel of Saint François about half a mile farther south-eastward. In the town, the following are prominent and may be identified: the twin towers of the church of Sainte Marie, situated about 3½ cables southward of Île Siccota; the cathedral, about half a cable farther eastward; a large hotel, painted red and having two flagstaffs, about one cable south-eastward of the cathedral; and a circular stone tower at the northern end of the town, about 1½ cables north-eastward of the church of Sainte Marie. 10

Lights.—Dangers.—A light is exhibited, at an elevation of 180 feet (54^{m9}), from a white square tower and dwelling, 33 feet (10^{m1}) in height, situated on the western summit of Grande Île Rousse (*Lat.* 42° 39' N., *Long.* 8° 56' E.). 20

A light is exhibited, at an elevation of 41 feet (12^{m5}), from a white tower, 18 feet (5^{m5}) in height, situated on the head of the jetty. 25

Danger de l'Île Rousse, a rocky shoal with a least depth of 3½ fathoms (6^{m9}) over it, lies about 4½ cables north-north-westward of the jetty head; Sommet d'Orlica in line with the head of the jetty, bearing 165°, passes close eastward of this shoal.

Haut fond de Naso, with a least depth of 7½ fathoms (14^{m1}) over it, lies about 5½ cables north-eastward of the jetty head. 30

A 4½-fathom (7^{m8}) rocky patch lies about 1½ cables west-north-westward of the western end of Île Siccota.

The north-eastern side of the islands is fronted by a bank with less than 3 fathoms (5^{m5}) over it, which extends about one cable offshore in places. 35

Roches de la Puntella, a chain of low rocks about one foot (0^{m3}) high, extends about one cable north-eastward from the coast at the northern end of the town, about 2½ cables southward of the jetty head.

Anchorage.—Vessels of any size can anchor, in depths of from 8 to 15 fathoms (14^{m6} to 27^{m4}), north-eastward of the town, but the anchorage is exposed to winds from between north-west and north-east. 40

Port de l'Île Rousse.—Port facilities.—Medium-draught vessels can secure alongside the southern side of the outer part of the jetty where there are depths alongside of 16½ feet (5^{m0}) for a distance of about 400 feet (121^{m9}); other vessels anchor in the harbour and haul their sterns to within about 30 feet (9^{m1}) of the jetty, heading south-south-westward. The outermost berth at the jetty is reserved for the mail vessel and, owing to foul ground, vessels cannot berth alongside the inner part of the jetty, north-westward of some landing steps. The harbour is sheltered from all except south-westerly winds, which blow across the causeway. 50

In addition to the steps at the jetty, boats can land at a small stone

Charts 1131, 1780, 160, 2158a, 449.

Charts 1126, plan of Île Rousse, 1131.

jetty, about 60 feet (18^m3) long with a depth alongside of 3 feet (0^m9), situated facing the northern end of the lazaretto on Grande Île Rousse. Landing may also be effected at a stone jetty in the harbour about
 5 1½ cables southward of the lazaretto; it is about 120 feet (36^m6) long and has depths of about 6 feet (1^m8) alongside the outermost 70 feet (21^m3).

Fresh provisions can be obtained and water is laid on to the jetty.

Local pilots can be obtained in case of need.

10 Chart 1131.

Île Rousse to Pointe Vecchiaja.—Aspect.—Viewed from seaward, the rocky coast between Île Rousse and Pointe Vecchiaja, about 18 miles east-north-eastward, appears to be dominated by Chaîne des Agriates, a range with peaks of from 1,300 to 1,650 feet (396^m2 to
 15 502^m9) high. The most distinctive summits of this range are Mont Iffana, rounded and 1,558 feet (474^m9) high, situated about 8½ miles east-north-eastward of the town of Île Rousse; Mont Robbia, 1,355 feet (413^m0) high, which appears a very pointed peak about 2½ miles farther east-north-eastward; and Mont Genova (*Lat.* 42° 42' N., *Long.* 9°
 20 12' E.), 1,371 feet (417^m9) high, cone-shaped, rocky and blackish, about 1½ miles south-eastward of Mont Robbia.

Coast.—Off-lying bank.—From Île Rousse, the coast trends about 3 miles eastward to Pointe Lozari, a point flanked on the west by a large house and some sheds with red roofs and on the east by a
 25 large sandy beach with several houses close within it. About 3½ miles southward of Pointe Lozari is the village of Belgodère, remarkable on account of its elevated situation on the slopes of Sommet d'Allo Stillago, 4,157 feet (1,267^m0) high, and blackish and bare.

From Pointe Lozari, the coast trends about 2½ miles east-north-
 30 eastward to Anse de Perasolo (Porajola), on the north-eastern entrance point of which is a ruined tower close to a sandy cliff, which latter forms a white patch which is visible from some distance seaward.

From the north-eastern entrance point of Anse de Perasolo, the coast trends northward about 1½ miles to Pointe de l'Alciolo, a high
 35 point rising steeply to an elevation of 558 feet (170^m0) at Mont Orlando, about 4 cables south-eastward of its extremity. Pointe de l'Alciolo may be recognised by Croc de l'Alciolo, a pointed rock resembling a beak pointing westward.

Between Pointe de l'Alciolo and Pointe de Curza (Parallo), about
 40 7¾ miles east-north-eastward, the coast consists of a succession of rugged bays, the most distinctive of which is Anse de Malfalco, about 3 miles north-eastward of Pointe de l'Alciolo; a watch tower stands on the western entrance point of this cove.

Pointe Solche lies about 1½ miles, Pointe de l'Arinetta, 2¾ miles,
 45 and Pointe Mortella, about 3½ miles, north-eastward of Pointe de l'Alciolo. Pointe Genibaretta lies about three-quarters of a mile, and Pointe de Mignole about 2 miles, eastward of Pointe Mortella; both these latter points may be identified by the large sand dunes on them and by a black pyramid which stands, at an elevation of about 500 feet
 50 (152^m4), about 4 cables southward of Pointe de Mignole.

Banc de Malfalco, with depths of from 27 to 33 fathoms (49^m4 to 60^m4) over it, lies about 3 miles north-eastward of Anse de Malfalco; there is a very heavy sea on this bank during westerly winds and it should be given a wide berth.

Charts 1780, 160, 2158a, 449.

Chart 1131.

Between Pointe de Mignole and Pointe de Curza, about $2\frac{1}{2}$ miles eastward, the coast forms a slight bight at the head of which is Plage de Saleccia, a sandy beach with several huts on its western part. Pointe de Curza is of little elevation but is a salient point, whitish in colour, and is surmounted by a pyramid. From Pointe de Curza, the coast trends south-eastward for about $1\frac{1}{2}$ miles to Pointe de la Mortella.

Chart 1083.

Golfe de Saint Florent.—**Lights.**—Golfe de Saint Florent is entered between Pointe de la Mortella and Pointe Vecchiaja, about 3 miles eastward. It affords but indifferent anchorage as the swell is felt strongly in it and the holding ground is poor.

A disused signal station, painted white and prominent, stands about 2 cables south-westward of Pointe de la Mortella and a ruined tower stands about a similar distance southward of the point. Other land marks in the gulf are:—On the western side, Pointe de Cepo (*Lat.* $42^{\circ} 42' N.$, *Long.* $9^{\circ} 16' E.$), situated about $1\frac{1}{2}$ miles south-south-eastward of Pointe de la Mortella and crowned by an ancient battery, and Cap Fornali, about three-quarters of a mile farther south-south-eastward, with an old tower on the summit of the point; at the head of the gulf, the village and citadel of Saint Florent, about one mile south-eastward of Cap Fornali; and, on the eastern side, a pyramid close within Pointe Vecchiaja, and a cemetery, planted with cypress trees, situated about 6 cables north-eastward of the citadel.

A light is exhibited, at an elevation of 140 feet (42^m7), from a white square tower and dwelling with a black cupola, 38 feet (11^m6) in height, situated on Pointe de la Mortella.

A light is exhibited, at an elevation of 46 feet (14^m0), from a white square tower and dwelling, 31 feet (9^m4) in height, situated on Cap Fornali.

Dangers.—**Beacon.**—Écueil de la Tégrosa, a rocky bank, parts of which are nearly awash, lies about 3 cables westward of the citadel at Saint Florent and is marked by a red circular masonry beacon, 27 feet (8^m2) in height, surmounted by a cylinder.

A rocky patch, with a least depth of less than 6 feet (1^m8) over it, lies about 2 cables north-eastward of the beacon on La Tégrosa.

Dangers extend as much as $1\frac{1}{2}$ cables from the western shore of the gulf and the eastern shore is fronted by a bank which, with depths of less than 6 feet (1^m8) over it, extends in places about 4 cables offshore.

Anchorage.—**Prohibited anchorage.**—Large vessels may obtain anchorage, sheltered from all save northerly winds, in depths of from $6\frac{1}{2}$ to 7 fathoms (11^m9 to 12^m8), in Rade de Fornali, about 3 cables south-eastward of Cap Fornali light-structure. A small landing stage, with a depth alongside of 3 feet (0^m9), is installed near the foot of the light-structure.

Smaller vessels wishing to anchor off Saint Florent must pass westward of Écueil de la Tégrosa and should anchor, in depths of about 20 feet (6^m1), about one cable southward of La Tégrosa beacon.

Owing to the existence of submarine cables, anchorage is prohibited in the vicinity of the alignment of two beacons, bearing 191° , each painted in blue and white horizontal bands and surmounted by a white disc, situated on a beach at the head of the gulf. In 1948 it was reported that these beacons had disappeared.

Life-saving.—A pulling lifeboat is stationed at Saint Florent.

Charts 1780, 160, 2158a, 449.

Chart 1131.

Pointe Vecchiaja to Île de Centuri.—Coast.—From Pointe Vecchiaja, the coast which forms the western side of Presqu'île du Cap Corse, and is backed between 2 and 4 miles inland by a high mountain ridge, trends northward for about 15 miles to Île de Centuri.

Marine de Negro lies about $2\frac{3}{4}$ miles north-north-eastward of Pointe Vecchiaja. The village of Nonza is situated about $1\frac{1}{2}$ miles farther northward; it is perched on a steep rock, and may be identified from a considerable distance by a large square tower on its northern side, and by a white belfry which stands eastward of the road.

Roches d'Albo, about $1\frac{1}{4}$ miles north-north-westward of Nonza, are formed by a perpendicular white cliff, very prominent from a distance.

Pointe de Canelle lies $1\frac{1}{2}$ miles north-north-westward of Roches d'Albo; on it stands a pyramid, and there are several houses along the beach, about a quarter of a mile south-eastward of the point. This part of the coast is overlooked by Mont Cuccaro, 3,058 feet (932^m1) high and conical, situated about 2 miles eastward of Pointe de Canelle.

The belfry of Canari, a white square tower, is the most prominent object on the western side of Presqu'île du Cap Corse, and is situated about $1\frac{1}{2}$ miles north-eastward of Pointe de Canelle (*Lat.* 42° 50' N., *Long.* 9° 19' E.). In this vicinity may be distinguished the houses of Piazza, with two important buildings, a large convent with a pink belfry on the northern side, and a chateau with four brick towers on the southern.

Rocks extend 2 cables westward of Pointe de Scala, situated about 6 cables north-eastward of Pointe de Canelle.

Pointe Minerbio, about $3\frac{3}{4}$ miles northward of Pointe de Canelle, is overlooked by Mont Minerbio, 1,371 feet (417^m9) high, with a pyramid on its summit, situated $3\frac{1}{2}$ cables eastward of it. About one mile eastward of Mont Minerbio, Mont Gupietta rises to an elevation of 2,467 feet (751^m9).

About $1\frac{1}{2}$ miles north-eastward of Mont Minerbio, and a quarter of a mile inland, lies the village of Pino, with the remarkable Château Piccione and several tombs. Near the coast an old tower on a low rounded hill overlooks, from southward, the convent of Pino, the belfry of which is conspicuous when approaching from northward. Sommet Rotto, 2,169 feet (661^m1) high, is situated about $1\frac{3}{4}$ miles east-north-eastward of Mont Minerbio; about 3 cables farther east-north-eastward is Tour de Sénèque, built on a remarkable rocky pinnacle. The convent of Sainte Lucie is situated on a small plateau at the foot of this tower.

Chart 3901.

Pointe d'Aliso, the northern entrance point of Anse d'Aliso, lies about $2\frac{1}{4}$ miles north-eastward of Pointe Minerbio, and the village of Morsiglia lies about a mile farther north-eastward. About a quarter of a mile south-south-eastward of this village is a belfry and close north-westward of it is Tour de Gasparini. On a summit about three-quarters of a mile eastward of Morsiglia stands the chapel of La Madone, and half a mile southward of that village, in a pass between two hills, is the chapel of Sainte Lucie. Two mills stand on an elevation about $1\frac{1}{4}$ miles northward of Pointe d'Aliso, and a convent lies about a quarter of a mile east-north-eastward of them.

Chart 1126, plan of Centuri.

Baie de Centuri.—Baie de Centuri is entered between Île de Centuri,

Charts 1131, 1780, 160, 2158a, 449.

Chart 1126, plan of Centuri.

an island connected with the coast about 2 miles northward of Pointe d'Aliso by a ridge of rocks, and the mainland coast about three-quarters of a mile northward. Prominent objects at the head of the bay are Marcantoni mill, situated about half a mile north-eastward of the eastern extremity of the island; Château Marcantoni, a square building with green shutters and a terrace surmounted by a flagstaff, situated about 4 cables eastward of the mill; and a grey belfry in the village of Centuri, about a quarter of a mile southward of the mill. Sommet Torricella, 1,785 feet (544^m1) high, with a pyramid on its summit, stands about 1½ miles eastward of the head of the bay, and on the same ridge, about 4 cables farther north-north-westward, the chapel of Sainte Catherine stands at an elevation of 1,709 feet (520^m9).

Chart 1131.

Dangers.—Haut fond de Centuri (*Lat.* 43° 00' N., *Long.* 9° 17' E.), a rocky bank with a least depth of 7½ fathoms (13^m7) over it, lies about 3 miles north-westward of Île de Centuri. The sea breaks heavily on this bank during bad weather and it should be given a wide berth.

A 9-fathom (16^m5) rocky patch lies about three-quarters of a mile north-westward of Île de Centuri.

Chart 1126, plan of Centuri.

The shores of Baie de Centuri are fronted by a rocky bank with depths of less than 3 fathoms (5^m5) over it, which extends about one cable offshore. A rock with a depth of about one foot (0^m3) over it lies about 1½ cables north-north-westward of the northern extremity of Île de Centuri.

Anchorage.—There is anchorage in Baie de Centuri in depths of from 8 to 10 fathoms (14^m8 to 18^m3), with Marcantoni mill in line with the flagstaff at the château, bearing about 086°. The holding ground at this anchorage is not very good and vessels should be ready to weigh in case of a westerly sea arising.

Port de Centuri.—A small harbour for fishing boats is situated at the south-eastern corner of the bay, abreast the village of Centuri; it is accessible only to vessels drawing less than 6½ feet (2^m0). A shoal patch, marked by a red beacon, lies in the entrance to the harbour; in 1949, this beacon was reported destroyed.

In 1950, it was reported that the harbour had shoaled considerably and was only accessible to small fishing boats in the outer part.

Chart 3901.

Baie de Centuri to Pointe d'Agnello.—Coast.—Signal station.—From the northern entrance point of Baie de Centuri the coast trends northward for about one mile to Cap Bianco, the north-western extremity of Presqu'île du Cap Corse. From Cap Bianco, the coast, which is composed of rugged and blackish cliffs, trends north-north-eastward for about 3½ cables to Pointe Corno di Becco, a jagged point shaped like a beak, and thence north-eastward for about 8 cables to Cap Grosso.

Cap Corse signal station, through which messages may be transmitted to Lloyds, stands, at an elevation of 417 feet (127^m1), on the summit of Cap Grosso. See page 8.

Chart 1126, plan of C. Corse road.

A round tower surmounted by a pyramid stands on Pointe Tollare, which is situated, near a small village of the same name, about 1½ miles eastward of Cap Grosso. From Pointe Tollare the coast decreases in

Charts 1131, 1780, 160, 2158a, 449.

Chart 1126, plan of C. Corse road.

elevation to Barcaggio, a fishing village about 6 cables eastward ; from about 2 cables eastward of this village a sandy beach, interrupted by a rocky point, extends about half a mile eastward ; thence the coast
 5 trends about $3\frac{1}{2}$ cables north-eastward forming a rocky point, faced by a white cliff, which marks the northern extremity of the island of Corsica. About a quarter of a mile farther east-south-eastward at the eastern end of the north coast of the island, is Pointe d'Agnello, crowned by a round tower standing on the edge of the cliffs.

- 10 **Île de la Giraglia.—Light.—Danger.**—A bank on which the depths are 10 fathoms (18^m3) and less fronts the coast between Pointe Tollare and Pointe d'Agnello (*Lat. $43^\circ 01' N.$, Long. $9^\circ 25' E.$*), extending as much as $1\frac{1}{4}$ miles offshore. On the northern end of this bank lies Île de la Giraglia, a steep, whitish rock, on the summit of which
 15 stands an old square tower. Depths of less than 5 fathoms (9^m1) extend about 4 cables offshore close eastward of the village of Barcaggio and reduce the width of the fairway between the island and the mainland to about half a mile in which there are depths of from $5\frac{1}{2}$ to 10 fathoms (10^m1 to 18^m3). There are two landing places on the
 20 island, one on the eastern side with depths of $6\frac{1}{2}$ feet (2^m0) alongside, the other on the western side with depths alongside of 5 feet (1^m5).

A light is exhibited, at an elevation of 278 feet (84^m7), from a white tower and base, 73 feet (22^m3) in height, situated close to an old tower on the northern part of Île de la Giraglia, about $1\frac{1}{4}$ miles north-
 25 ward of the village of Barcaggio.

A rock, awash, lies about one cable westward of the northern extremity of Île de la Giraglia.

Charts 3901, 1131, 1780, 160, 2158a, 449.

CHAPTER VII

ISLAND OF CORSICA—SOUTHERN AND EASTERN COASTS

CLIMATE AND WEATHER.—*See* page 28.*Chart 1131.*

GENERAL REMARKS.—Anchorages.—On the southern coast of Corsica, anchorage sheltered from north-westerly winds may be obtained in Anse de Fornello (page 188) and in Golfe de Figari 5 (page 189).

On the eastern side of the island there is good anchorage, sheltered from westerly winds, for all vessels in Golfe de Porto Vecchio (page 199), and small vessels may obtain anchorage sheltered from all winds at the head of this gulf. Golfe de Pinarello (page 202) affords anchorage 10 sheltered from westerly and southerly winds but is exposed eastward. Between Golfe de Pinarello and Solenzara (page 203) the offshore depths are too great for anchorage but, except during easterly winds, vessels may anchor anywhere off the sandy coast between Solenzara and Bastia (page 206). Landing on this latter stretch is frequently 15 impossible even in fine weather on account of the surf, but the breakers are often less heavy abreast various villages, notably Marine de Prunete (page 204). On this part of the coast, the anchorages most used are off Solenzara and off Pointe d'Arco, the latter situated about 9 miles southward of Bastia. 20

Chart 429.

SOUTHERN COAST.—Pointe Aquila to Tour d'Olmato.—Dangers.—Beacon.—Between Pointe Aquila (page 162) and Cap de Feno (*Lat.* 41° 24' N., *Long.* 9° 06' E.), about 17 miles south-eastward, the coast is overlooked by Montagnes des Cagna (page 161) with three 25 characteristic peaks and several other summits which are visible from some distance seaward.

From Pointe Aquila, the rocky coast trends south-eastward for about 3½ miles to Cap de Zivia and is indented by several coves and backed by low mountains which form isolated blocks. 30

Pointe de Bercajo lies about 1½ miles east-south-eastward of Pointe Aquila; a rocky spit with depths of one and 1½ fathoms (1^m8 and 3^m2) over it extends about 2 cables west-south-westward of the point.

Port de Tizzano, a narrow cove entered about 1½ miles north-north-eastward of Cap de Zivia, may be identified by an old fort of a greyish 35 colour on the western side of the entrance and by a group of three

Charts 1131, 1780, 160, 2158a, 449.

Chart 429.

houses on the opposite shore of the cove. Îlot Latoniccia, about 66 feet (20^m1) high, white and steep, lies about 3 cables southward of Cap de Zivia; a 2½-fathom (4^m6) rocky patch lies about 1½ cables southward of the islet and there is foul ground between the islet and the coast.

Haut fond de Latoniccia, a rocky bank with a least depth of 12 fathoms (21^m9) over it, lies about 2½ miles southward of Cap de Zivia; during westerly winds this bank should be avoided on account of the eddies which raise a heavy sea on it.

Golfe de Murtoli is entered between Cap de Zivia and Pointe de Murtoli, a bare point about 2 miles east-south-eastward; rocks extend about 2½ cables south-westward of the latter point. At the head of the gulf is a low beach, overlooked by the rocky Sommet de Pietra Nera, 646 feet (196^m9) high, situated about 1½ miles north-eastward of Cap de Zivia, and by the conical Sommet de Villa, about 1½ miles north-north-eastward of Pointe de Murtoli. A valley, down which flows Ruisseau de Loreto, separates these two peaks.

Golfe de Roccapina is entered between Pointe de Murtoli and Pointe de Roccapina about 2 miles south-eastward; it is overlooked by Sommet Cauria, 905 feet (275^m9) high, situated about 1½ miles north-eastward of Pointe de Murtoli. The northern shore of the gulf is rocky and is fronted by rocks which extend as much as 3 cables offshore in places; the eastern shore is composed of a wide sandy beach. A rocky islet surrounded by rocks lies about 1½ cables west-south-westward of Pointe de Roccapina. Tour de Roccapina stands at an elevation of 440 feet (134^m1) about half a mile north-eastward of Pointe de Roccapina, and about 2 cables farther north-eastward is a ruined tower which, viewed from eastward, resembles a lion *couchant*.

The promontory terminating in Pointe de Roccapina (*Lat.* 41° 30' N., *Long.* 8° 55' E.) forms the western side of Anse de Roccapina; the western and northern shores of this cove are fronted by rocks extending about 2 cables offshore. From the eastern entrance point of Anse de Roccapina, the coast trends east-south-eastward for about 2½ miles to the western entrance point of Anse de Fornello, which is fringed by rocks extending about one cable offshore and on which stands a white and prominent tower named Tour d'Olmeto. This stretch of coast is rugged, rocky and deserted and is backed by Sommet La Petrosa, 1,852 feet (412^m1) high, situated about 3 miles east-north-eastward of Pointe de Roccapina. *See* view facing this page.

A rocky bank on which the depths are less than 5 fathoms (9^m1) fronts the coast for about 8 cables north-westward of the point on which is Tour d'Olmeto, and extends as much as 5½ cables offshore. Écueil du Prêtre, a rocky patch on which stands a masonry beacon, painted in red and black horizontal bands and 11 feet (3^m4) high, lies near the edge of this bank, about 7 cables westward of Tour d'Olmeto.

Off-lying dangers.—Light.—Les Moines consist of three groups of rocks lying between about 1½ miles southward and 2½ miles south-south-westward of Pointe de Roccapina; the centre group of rocks, one of which is 20 feet (6^m1) high, is the highest. These rocks are covered by a *red* sector of Pointe Sênétosa light (page 162) between the bearings of 306° and 328°.

A light is exhibited, at an elevation of 87 feet (26^m5), from a white beacon-tower situated on the southernmost group of rocks, about

Charts 1131, 1780, 160, 2158a, 449.

To face page 188.

a



Les Moines. Cap de Zivia.

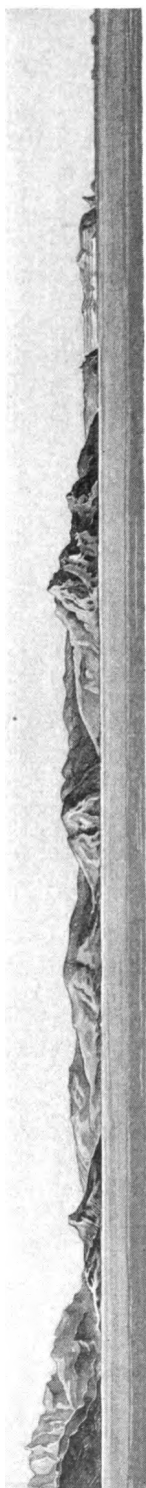
Tour de Rocapina.

Tour d'Olmelo.

Sommet Ouaze.

a

a



Golfe de Figari.

Golfe de Ventilegne.

*Sommets de la Trinité,
bearing about 090°,
distant 5 miles.*

*Tour de
Bonifacio.*

Cap Pertusato.

Ile Lavezzi.

View, in two parts, of southern coast of Corsica from Cap de Zivia
to Cap Pertusato.

(Original dated 1881.)

a



Sommets de la Trinité.

Bonifacio.

Cap. Pertusato lighthouse,
bearing 062°, distant 8 miles.

a

a

b



a Ile Cavallo.

Ile Lavezzi lighthouse.

Isola Razoli lighthouse.

b

b



b

Isola Spargi.
Isolotto Spargetto
(in front).

Punta Falcone.

Capo Testa lighthouse,
bearing 127°, distant 64 miles.

View, in three parts, of Bonifacio strait from westward.
(Original dated 1882.)

Chart 429.

2½ miles south-south-westward of Pointe de Roccapina. Rocks extend about 1½ cables south-westward of the light-structure.

Grand Écueil d'Olmeto and Petit Écueil d'Olmeto are two groups of rocks, lying about 1½ and 1¾ miles, respectively, south-westward of Tour d'Olmeto; the former has a least depth of half a foot (0^m2), and the latter of 12 feet (3^m7), over it.

The passage between Les Moines and Petit Écueil d'Olmeto is about 1½ miles wide. The northern end of Les Moines is steep-to and the two northernmost rocks are easily distinguished so that vessels may pass close north-eastward of them.

The rocky islet close west-south-westward of Pointe de Roccapina, bearing 317° and in line with a 620-foot (189^m0) summit about half a mile south-westward of Sommet de Pietra Nera, leads between Grand and Petit Écueil d'Olmeto.

The rocky islet close west-south-westward of Pointe de Roccapina, bearing about 296° and seen midway between Îlot Latoniccia and Cap de Zivia, leads between Grand Écueil d'Olmeto and Écueil du Prêtre but passes very close to a 4¾-fathom (8^m7) patch which lies between the two shoals.

Tour d'Olmeto to Pointe de Figari.—Anchorage.—Anse de Fornello is entered between the point on which is Tour d'Olmeto and a point about 8½ cables eastward; a chain of rocks extends about 1½ cables southward of the latter point. About 1¾ miles north-north-eastward of the head of the cove, the village of Monacia, in which is a slender, bluish belfry, may be distinguished at an elevation of 348 feet (106^m1). Small vessels with local knowledge may obtain anchorage in Anse de Fornello, in depths of about 9 fathoms (16^m5), about 4 cables east-north-eastward of Tour d'Olmeto. The anchorage is sheltered from north-westerly winds but is exposed to those from southward and south-westward.

From the eastern entrance point of Anse de Fornello, the coast trends about half a mile eastward to Anse d'Arbitro, and thence south-eastward for about three-quarters of a mile to Pointe Bruzzi (*Lat. 41° 28' N., Long. 9° 02' E.*), from which a shoal rocky bank extends about 3 cables southward and half a mile westward. On this rocky bank lie Îles Bruzzi, a group of rocks of which the largest lies about 2 cables south-westward of Pointe Bruzzi. A rocky shoal with a least depth of 1½ fathoms (2^m3) over it lies about 4 cables southward of Pointe Bruzzi.

Anse de Caperino is entered between Îles Bruzzi and Pointe de Figari, about three-quarters of a mile eastward. A rocky bank on which are several rocks and shoal patches fronts the eastern side of the cove to a distance of about 1½ cables offshore and extends as much as 3½ cables south-westward from Pointe de Figari. About 1½ miles northward of the head of the cove is Sommet de Chéta, 512 feet (156^m1) high, a pointed, pyramidal peak, formed of blackish, heaped-up blocks. On the western side of the cove, Sommet di Pozzo, 423 feet (128^m9) high and crowned with a stone pyramid, rises about three-quarters of a mile northward of Pointe Bruzzi and the black rocky mass of Mont Milese rises to an elevation of 538 feet (164^m0), about 4 cables farther northward.

Golfe de Figari.—Dangers.—Golfe de Figari is entered between Pointe de Figari and Pointe de Ventilègne, about 2 miles east-south-

Charts 1131, 1780, 160, 2158a, 449.

Chart 429.

eastward, and affords good anchorage to vessels with local knowledge except during south-westerly winds; the bottom is sand and mud and is moderately good holding ground.

- 5 The gulf is overlooked by Mont Scopeto, 594 feet (181^m0) high, with a sharp conical summit, about 1½ miles north-north-eastward of Pointe de Ventilègne; a village in which is a large and prominent house stands on the western slopes of Mont Scopeto. About 2 miles north-eastward of Pointe de Figari and close eastward of the village of
10 Calderello, are two characteristically pointed peaks, the western of which is 384 feet (117^m0) high, and about 2 cables south-westward of this peak is Chapelle Santa, a yellow mortuary chapel with columns. About one mile north-eastward of Pointe de Figari is Tour de Figari, standing on a heap of rocks on the western shore of the gulf; it is grey
15 in colour and does not show up prominently against the background.

Both sides of the gulf are fringed with rocks, above-water and sunken, which extend as much as 1½ cables from the western, and about 3 cables from the eastern shore. A one-foot (0^m3) rocky patch lies about 3½ cables east-south-eastward of Pointe de Figari and Rocher
20 Saint Jean, a group of above-water rocks, moderately steep-to on its eastern side, lies about 5½ cables eastward of the same point.

- On the eastern side of the fairway, Écueil de Testa di Gatto, 2 feet (0^m6) high and surrounded by sunken rocks, lies about 7 cables westward of Pointe de Ventilègne. Écueil de Figari, 3 feet (0^m9) high,
25 is the highest and outermost of a group of rocks lying about 9 cables eastward of Pointe de Figari and about a quarter of a mile off the eastern shore of the gulf. Îlot Porraja, situated about a quarter of a mile south-eastward of Tour de Figari, lies on the outer part of a rocky bank on which the depths are less than 3 fathoms (5^m5), which
30 fronts the eastern shore of the gulf. Îlot du Port, 16 feet (4^m9) high, lies near the head of the gulf, about 8 cables north-eastward of Tour de Figari (*Lat.* 41° 28' N., *Long.* 9° 04' E.).

Directions.—Anchorage.—Vessels should approach Golfe de Figari with Tour de Figari bearing about 008° and in line with Chapelle
35 Santa. When abreast a point about 2½ cables south-westward of Tour de Figari, course should be shaped to pass midway between that tower and Îlot Porraja to the anchorage. The width of the channel in which the depths are more than 5½ fathoms (10^m1) is little more than 1½ cables abreast Tour de Figari, and narrows as the head of the gulf
40 is approached.

Vessels with local knowledge may obtain anchorage, well sheltered from north-westerly winds, in depths of 9 fathoms (16^m5), weed, about 1½ cables east-south-eastward of Tour de Figari. Small coasters may proceed up the channel to Îlot du Port, close northward of which is
45 a small basin.

Pointe de Ventilègne to Cap de Feno.—Light.—Dangers.—Golfe de Ventilègne is entered between Pointe de Ventilègne and Îlots de la Tonnara, a group of islets lying close to the coast about 1½ miles south-eastward; a stone pyramid stands on the largest of these islets.
50 The northern and eastern shores of this gulf are fronted by a rocky bank, which, with depths of less than 5 fathoms (9^m1) over it, extends as much as 3½ cables offshore.

From abreast Îlots de la Tonnara, the coast trends southward for about 2 miles to Cap de Feno. About 1½ miles north-eastward of the

Charts 1131, 1780, 160, 2158a, 449.

Chart 429.

cape are Sommets de la Trinité, a rocky eminence with three peaks, the easternmost of which is surmounted by Croix de la Trinité at an elevation of 718 feet (218^m8) and has a hermitage standing at its foot. The westernmost peak is 751 feet (228^m9) high. 5

A light is exhibited, at an elevation of 75 feet (22^m9), from a white square tower, the upper part painted black, 30 feet (9^m1) in height, situated on Cap de Feno. Two prominent rocks lie close westward of the extremity of the cape.

A 1½-fathom (2^m7) patch lies about 1½ cables southward, and a 10 4¼-fathom (7^m8) patch lies about 3½ cables south-westward, of the extremity of Cap de Feno.

Charts 3915, 1189.

BONIFACIO STRAIT.—General remarks.—Bonifacio strait, known to the French as Bouches de Bonifacio, lies between the southern coast of Corsica and the northern coast of Sardinia, which latter coast is described in Mediterranean Pilot, Volume I. From Cap de Feno, the northern side of the strait trends east-south-eastward for about 4 miles to Cap Pertusato, thence eastward for about 1½ miles to Pointe Sperone, and thence north-north-eastward for about 4 miles 20 to Pointe Capicciaio.

The boundary between French and Italian territorial waters in the strait is indicated by the alignments of two pairs of beacons. The first pair are situated, one on Isola della Maddalena and one on Isola Budelli, two islands off the northern coast of Sardinia, and are in line 25 when bearing about 104°; the second pair, situated on Punta Marmorata at the northern extremity of the coast of Sardinia, are in line when bearing about 221°.

Vessels approaching from westward will, from some distance, identify the peaks of Montagnes de Cagna. L'Homme de Cagne (*Lat.* 30 41° 34' N., *Long.* 9° 04' E.), the south-western peak of this range, is rocky, mushroom-shaped and 3,986 feet (1,214^m9) high; Sommet Balira, about one mile farther north-eastward, is conical and 4,252 feet (1,296^m0) high; and Sommet Ovace, about half a mile north-eastward of Sommet Balira, is 4,393 feet (1,339^m0) high and is also conical. 35

On a closer approach, the prominent points and peaks on the coast north-westward of Cap de Feno, *see* pages 187-190, and the beacon-towers of Les Moines and Écueil du Prêtre, will be distinguished.

Between Cap de Feno and Pointe Sperone, the red granite rocks terminate on the coast, and in the vicinity of the port of Bonifacio the 40 coast is composed of nearly horizontal plateaux of whitish limestone, backed by angular ridges. *See* view on chart 1189 and facing page 189.

*Chart 3915.***NORTHERN SIDE OF BONIFACIO STRAIT.—Coast.**

Light.—Signal station.—Between Cap de Feno and Cap Pertusato, 45 about 4 miles east-south-eastward, the coast consists of a relatively low rocky cliff. The town and harbour of Bonifacio are situated on this stretch about 2½ miles eastward of Cap de Feno. Cap Pertusato terminates in the shape of a sailor's cap; Ilot Saint Antoine, on the summit of which stands a chapel, lies close southward of the extremity 50 of the cape.

A light is exhibited, at an elevation of 315 feet (96^m0), from a white

Charts 3915, 1189, 1131, 1780, 160, 2158a, 449.

Chart 3915.

square tower with a black upper part, 52 feet (15^m8) in height, and a white dwelling, situated about 2 cables east-north-eastward of the extremity of Cap Pertusato.

- 5 A signal station, through which messages can be transmitted to Lloyds, stands on the edge of the cliff, about half a mile northward of Cap Pertusato.

Chart 1126, plan of Port Bonifacio.

- Port de Bonifacio.—Lights.—Depths.**—The town of Bonifacio is built on an elevated and rocky peninsula, the sides of which overhang and in which there are chasms which appear as black patches on the white rock ; it is visible from some distance seaward. The town is bounded eastward by the white wall of the fortifications, about half a cable westward of which may be seen the church of Sainte Marie
- 15 Majeure, with a belfry carrying a toothed cornice and surmounted by a Byzantine dome. About 1½ cables westward of this church is the octagonal tower of Saint Dominique, with a barracks close south-westward of it. A little farther westward there is a mill built of iron, and close to the south-western extremity of the peninsula, is the low
- 20 and conical belfry of Saint François.

- Port de Bonifacio consists of a cove, from three-quarters of a cable to one cable wide, formed by the peninsula on which the town is built ; it affords excellent shelter to small craft. The harbour is entered between Pointe du Timon, the south-western extremity of the peninsula,
- 25 and Pointe de la Madonetta, the southern extremity of a small peninsula on the north-western side of the entrance, about 2½ cables west-north-westward. The entrance is difficult to distinguish from a distance.

- A light is exhibited, at an elevation of 98 feet (29^m9), from a square
- 30 tower and dwelling, painted white on the southern and eastern sides and red on the northern and western sides, 36 feet (11^m0) in height, situated on Pointe de la Madonetta (*Lat.* 41° 23' N., *Long.* 9° 09' E.).

- A light is exhibited, at an elevation of 27 feet (8^m2), from a truncated concrete column, the upper part painted black, 24 feet (7^m3) in height,
- 35 situated on Pointe d'Arinella, on the northern side of the harbour about 3 cables north-north-eastward of Pointe du Timon.

A light is exhibited, at an elevation of 19 feet (5^m8), from a white pyramid, 13 feet (4^m0) in height, situated on Pointe Cacavento, about 3 cables north-eastward of Pointe du Timon.

- 40 A light is exhibited, at an elevation of 23 feet (7^m0), from a white truncated column with a red top, 20 feet (6^m1) in height, situated at a landing place on the southern side of the harbour, close underneath the north-eastern corner of the town.

- On the northern side of the outer part of the harbour are two coves,
- 45 Calanque d'Arinella, on the eastern side of Pointe d'Arinella, and Calanque de la Catena, about 2 cables farther eastward ; two mooring buoys are moored in the latter cove.

- The head of the harbour has been dredged to a depth of 13 feet (4^m0), and an area about 164 feet (50^m0) square, to 20 feet (6^m1).
- 50 There are embankments with bollards on either side of the harbour and at its head are three stone quays, Quai Nord, Quai Est and Quai Sud. The bottom alongside the faces of these quays is foul with sunken rubble, and vessels are advised not to drop an anchor within about 66 feet (20^m1) of them. In 1949, vessels could not berth along-

Charts 3915, 1189, 1131, 1780, 160, 2158a, 449.

Chart 1126, plan of Port Bonifacio.

side Quai Est on account of obstruction by wrecks, but it was reported that a vessel of 230 feet (70^m1) in length, and draught not exceeding 8 feet (2^m4) forward and 14 feet (4^m3) aft, could berth about 6 feet (1^m8) from the face of Quai Nord. The central part of Quai Sud is normally available to vessels not exceeding 10 feet (3^m0) in draught. 5

Port facilities.—Life-saving.—In 1948, the population of Bonifacio was about 2,500. Moderate quantities of fresh provisions can be obtained and water is available at the quays.

The Captain of the Port's office is situated on Quai Sud. 10

There is regular sea communication with France.

A motor lifeboat is maintained at Bonifacio.

Chart 3915.

Coast. — Dangers. — Beacons. — Submarine cable. — From Cap Pertusato, the coast, which is composed of very rugged cliffs, 15 trends eastward for about 1½ miles to Pointe Sperone, a projecting tongue of land with vertical sides. A beacon, consisting of a square wall, painted white on the south-western, and black on the north-eastern side, stands on Pointe Sperone.

A rocky shoal with a least depth of 2½ fathoms (4^m6) over it, lies 20 about 6 cables eastward of Cap Pertusato and about 1½ cables offshore. Le Prêtre, a shoal with a least depth of 2½ fathoms (4^m6) over it, lies about 4 cables south-westward of Pointe Sperone. It is marked by a beacon, 20 feet (6^m1) high, painted in red and black horizontal bands and surmounted by a sphere. Le Prêtre is covered by a green sector 25 of Pointe Becchi light (page 194) between the bearings of 124° and 237°.

A submarine cable, the position of which is indicated on chart 3915, crosses Bonifacio strait from the head of Cala Fiumara (*Lat.* 41° 22' N., *Long.* 9° 12' E.), a light about 6 cables eastward of Cap Pertusato light-structure. 30

Charts 3915 and 1189.

From Pointe Sperone, the rugged and rocky coast trends about 4½ miles north-north-eastward to Pointe Capicciolo, the north-eastern extremity of Presqu'île de Santa Manza. About 2 cables south-westward of Pointe Capicciolo is a remarkable peak, 344 feet (104^m8) 35 high, in shape like a bishop's mitre, and about half a mile farther south-south-westward is Tour de Santa Manza, in ruins. See view facing page 196.

A bank on which the depths are less than 5 fathoms (9^m1) fronts the coast for about one mile north-north-eastward of Pointe Sperone and extends about half a mile offshore; on this bank, at a distance of between 4 and 6 cables from Pointe Sperone, is Île Piana, which is low, flat and surrounded by rocks. A beacon, consisting of a square wall, painted black on the north-eastern, and white on the south-western side, stands near the north-eastern coast of Île Piana. 45

Rocher de la Vachetta, about 2 cables southward of Île Piana, is the southernmost of the rocks surrounding the island, and patches with depths of less than 2 fathoms (3^m7) over them extend about half a mile north-eastward of the island.

About 1½ miles north-north-eastward of Pointe Sperone, a bank 50 with depths of less than 5 fathoms (9^m1) over it extends about 4½ cables offshore, and about one mile farther north-north-eastward and 1½ miles southward of Pointe Capicciolo, a similar bank extends as much as 6½ cables offshore. Les Gavetti, a group of above-water and sunken

Charts 1131, 1780, 160, 2158a, 449.

Charts 3915 and 1189.

rocks, the highest of which is 13 feet (4^m0) high, lie on this latter bank about three-quarters of a mile southward of Tour de Santa Manza.

Chart 3915.

- 5 **Off-lying islands and dangers. — Lights. — Beacons. —** Île Lavezzi, situated about 2 miles south-eastward of Pointe Sperone, is a rugged mass of rock surrounded by islets and rocks, both above-water and sunken.

A light is exhibited, at an elevation of 90 feet (27^m4), from a square tower, 33 feet (10^m1) in height, painted in red and white horizontal bands, with a white dwelling, with red horizontal bands on its eastern side, situated on Pointe Becchi, the southern extremity of Île Lavezzi. Pyramide de la Semillante stands on the south-easternmost islet off Île Lavezzi, about half a mile north-westward of Pointe Becchi light-structure.

Écueil de Lavezzi, a shoal with a least depth of 1½ fathoms (2^m7) over it, lies about one mile southward of Pointe Becchi.

A light is exhibited, at an elevation of 54 feet (16^m5), from a tower, painted in red and black horizontal bands, 57 feet (17^m4) in height, situated on Écueil de Lavezzi; see sketch on chart 1189.

Shoal patches, with depths of less than 6 fathoms (11^m0) over them, extend about half a mile south-south-eastward, 3 cables eastward, 3½ cables north-eastward, and 1½ cables north-westward, of Écueil de Lavezzi light-structure.

- 25 Écueil de Lavezzi and the dangers surrounding it are covered by a red sector of Isola Razzoli light (page 195) between the bearings of 093° and 106°, and by a red sector of Île Lavezzi light between the bearings of 334° and 053°.

Île Cavallo, 102 feet (31^m1) high and surrounded by rocks and shoals, lies about one mile northward of Île Lavezzi, with which it is connected by a rocky ridge.

Île Perduto (*Lat.* 41° 22' N., *Long.* 9° 18' E.), low and surmounted by a small block of rock, lies about 1½ miles eastward of the eastern extremity of Île Cavallo. It is surrounded by above-water and sunken rocks, extending about 3½ cables north-westward and about 2 cables south-westward; an islet lies close westward of Île Perduto with another islet close southward. Écueil de Perduto, a rock which dries one foot (0^m3), lies about half a mile south-eastward of Île Perduto. A green sector of Pointe Becchi light, between the bearings of 124° and 237°, covers these dangers.

Île Rutino, about 4 cables north-north-westward of the western extremity of Île Cavallo, is surrounded by a rocky bank which extends as much as 2½ cables north-westward of the island. Tignosa di Rutino, an iron beacon, 18 feet (5^m5) in height, painted black with a white horizontal band and surmounted by two black cones, points up, stands near the north-western edge of this bank, about 11 cables north-eastward of Pointe Sperone. A rock with a depth of 4 feet (1^m2) over it lies about 3½ cables northward, a 4¼-fathom (7^m8) patch lies a similar distance north-eastward, and a rock which dries one foot (0^m3) lies about 6 cables east-north-eastward, of Tignosa di Rutino; a spit with depths of less than 3 fathoms (5^m5) over it extends about 1½ cables south-westward from the last-named rock.

Charts 3915 and 1189.

Île Poraggia, 39 feet (11^m9) high and surmounted by a pyramid of

Charts 1189, 1131, 1780, 160, 2158a, 449.

Charts 3915 and 1189.

stones, lies about 11 cables north-eastward of Île Rutino, with an islet close north-eastward of it. Écueils de Poraggia, a group of above-water and sunken rocks, extend about a quarter of a mile north-eastward of this islet. Rocky shoals, with depths of less than 3 fathoms (5^m5) over them, extend about 1½ cables westward and about 3½ cables south-south-westward of Île Poraggia, and a 1½-fathom (3^m2) patch lies about 1½ cables eastward of it. 5

Chart 3915.

SOUTHERN SIDE OF BONIFACIO STRAIT.—Light.— 10
Danger.—The southern side of Bonifacio strait is formed by the northern coast of Sardinia in the western part and in the eastern part by Archipelago della Maddalena, a group of islands lying off that coast, of which Isola Razzoli, the north-westernmost of the group, lies about 3½ miles east-south-eastward of Île Lavezzi. 15

A light is exhibited, at an elevation of 282 feet (85^m9), from a square tower on a three-storied square building, 89 feet (27^m1) in height, painted in black and white horizontal bands and inscribed Faro Razzoli, situated near the north-western extremity of Isola Razzoli, about 4 miles east-south-eastward of Pointe Becchi light-structure. 20

Secca di Razzoli (*Lat.* 41° 19' N., *Long.* 9° 20' E.), a rock with a depth of 26 feet (7^m9) over it, lies about 4½ cables north-westward of Isola Razzoli light-structure and is the outermost danger on the southern side of the strait.

Isola Santa Maria lies close eastward of Isola Razzoli; Isola Presa 25 lies close off the northern extremity, and Isola Corcelli lies about three-quarters of a mile eastward of the eastern side of Isola Santa Maria. For a detailed description of the southern side of Bonifacio strait, see Mediterranean Pilot, Volume I.

CHANNELS.—Grande Passe des Bouches.—Directions.— 30
 Grande Passe des Bouches, known to the Italians as Bocca Grande, the main channel through Bonifacio strait, lies between Île Lavezzi and Île Perduto on the northern side, and the northern coast of Sardinia and Archipelago della Maddalena on the southern side. The fairway is not less than 3 miles wide and the navigation presents no difficulties 35 either by day or at night.

At night, vessels from westward should keep Isola Razzoli light bearing less than 093°, which is the southern limit of the *red* sector of that light covering Écueil de Lavezzi; having passed through the *red* sector of Pointe Becchi light covering Écueil de Lavezzi, course can 40 be shaped north-eastward out of the strait.

Vessels approaching from northward or north-eastward should keep Isola Razzoli light bearing not less than 180°, which passes eastward of Écueil de Perduto; when Île Lavezzi light bears 270°, course should be shaped south-westward through the middle of the strait between 45 Isola Razzoli and Écueil de Lavezzi; when the vessel has passed through the *red* sector of Isola Razzoli light, course should be altered westward and the light should be kept bearing about 080° astern until clear westward of Écueil de Lavezzi, when course may be shaped as convenient. 50

The passage between Écueil de Lavezzi and Île Lavezzi does not much shorten the distance and is not recommended for large vessels.

Charts 1189, 1131, 1780, 160, 2158a, 449.

Chart 3915.

There is a width of about 4 cables in the fairway between the rocky patches. Vessels using this passage should keep Isola Razzoli light-structure, or at night, the light, bearing between 106° and 110° , but nearer the former bearing, which is the bearing of the northern limit of the red sector of the light.

The passage between Île Perduto and Île Cavallo is useful to vessels rounding Corsica. Vessels using this passage can avoid the dangers surrounding Île Poraggia by keeping the eastern extremities of Île Cavallo and Île Lavezzi in line and bearing about 198° until past the island.

Passage de Piantarella.—Anchorage.—Passage de Piantarella lies between the south-eastern coast of Corsica north-westward, and Île Rutino and Île Poraggia south-eastward. Vessels approaching from westward should give Le Prêtre a wide berth and should steer 090° until Tignosa di Rutino is in line with the easternmost extremity of the coast of the mainland, bearing about 023° , which passes eastward of Rocher de la Vachetta, when course should be altered north-north-eastward to pass about one cable westward of Tignosa di Rutino. When the wall-beacons on Pointe Sperone and Île Piana come in line, course should be altered north-eastward and the wall-beacons kept in line astern, bearing 228° , which leads between Île Poraggia and Les Gavetti. When in the vicinity of Île Poraggia, care must be taken not to get south-eastward of the alignment of the wall-beacons, which passes very close to Écueils de Poraggia.

Vessels approaching from northward or north-eastward should keep the eastern extremity of Île Cavallo (*Lat.* $41^{\circ} 22' N.$, *Long.* $9^{\circ} 17' E.$) bearing about 190° until on the alignment of the two wall-beacons, when they should be kept in line, bearing 228° until abreast Tignosa di Rutino, when course should be altered to 180° . When the beacon on Le Prêtre bears 270° , course may be shaped as convenient. Passage de Piantarella is only practicable by day when the wall-beacons are clearly visible.

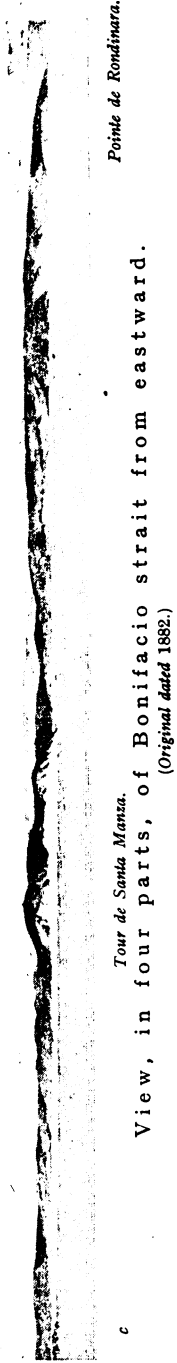
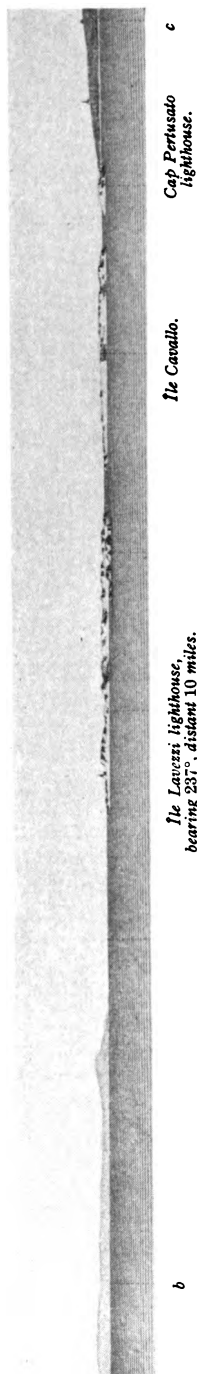
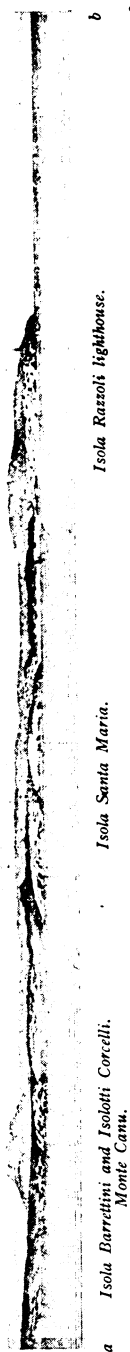
There is anchorage sheltered from all winds in Mouillage de la Piantarella, about 2 cables north-eastward of the wall-beacon on Île Piana. It is only available by day and for small vessels with local knowledge. During fine weather, good anchorage may be obtained north-westward of Tignosa di Rutino.

Chart 1131.

EASTERN COAST.—Aspect.—Between Pointe Capicciolo and Pointe de Chiappe, about 11 miles north-north-eastward, the coast is steep and rocky. On this stretch about 10 miles inland, several distinctive peaks of Montagnes de Cagna may be distinguished; amongst these, l'Homme de Cagne, the adjacent conical peaks of Balira and Ovace (page 161), and the rocky cliffs of Compoelli, about $2\frac{1}{4}$ miles east-north-eastward of Sommet Ovace, are prominent. Close within the coast, Sommet de Raffaello, 896 feet (273^m) high, about 5 miles northward of Pointe Capicciolo, Punta del Oro, a hill 630 feet (192^m) high, about $2\frac{1}{4}$ miles farther northward, and Sommet Cerchio, 1,066 feet (324^m) high, about $2\frac{3}{4}$ miles west-south-westward of Pointe de Chiappe, all overlook this stretch and may be identified.

Between Pointe de Chiappe and Solenzara, about 16 miles northward, the coast is rocky and backed by ranges with numerous peaks

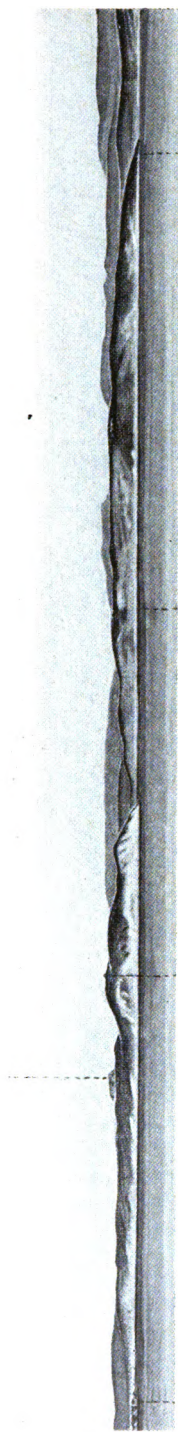
Charts 1780, 2158a, 449.



View, in four parts, of Bonifacio strait from eastward.
(Original dated 1882.)

Sommets de la Trinité.

a

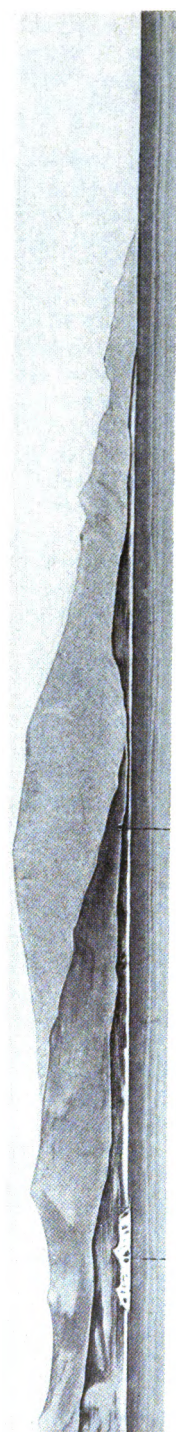


Îlot Porraja.

a L'Homme de Cagne. Tour de S. Manza. Golfe de S. Manza. Sommet Compodelli. Pointe de Rondinara. b



a Tour de Sponsaglia, bearing about 294°, distant 10 miles. b



b Île du Toro. Pointe de Chiappe lighthouse.

View, in three parts, of approach to Bonifacio strait from north-eastward.
(Original dated 1938.)

Chart 1131.

and pinnacles. Prominent among them is a range with two remarkable peaks, Mont Incudine, 7,008 feet (2,136^m0) high, situated about 8½ miles westward of Solenzara, and Sommet del Fornello, 6,332 feet (1,930^m0) high, about 1½ miles farther south-eastward; this latter mountain presents a cliff face more than 3,000 feet (914^m4) in height. Farther southward lie Chaîne des Aiguilles de Bavella, a range which terminates southward in Sommet della Vacca Morta, 4,314 feet (1,314^m9) high, the rugged and blackish summit of which is situated about 10 miles west-north-westward of Pointe de Chiappe and dominates a valley extending westward from the head of Golfe de Porto Vecchio.

Between Solenzara and Bastia, about 52 miles northward, the coast is low, marshy, fringed with a wide sandy beach and backed at from 2 to 10 miles inland by mountain ranges. Off the southern end of this stretch, apart from two factory chimneys at Solenzara which can be distinguished from some distance seaward, the only prominent landmark is the distant Sommet de la Capella, 6,706 feet (2,044^m0) high, situated about 11½ miles farther north-westward. Proceeding northward, Mont Saint Appiano, 3,586 feet (1,093^m0) high, about 19 miles north-north-eastward of Sommet de la Capella, will be seen about 5 miles inland; on the western side of the former mountain is a plain stretching south-westward and dominated by the distant peaks of Monte Rotondo and Monte d'Oro, which are generally snow-clad from about November till April (page 161). Mont Osari, 3,711 feet (1,131^m1) high, situated about 5 miles northward of Mont Saint Appiano, is the most prominent peak in a range which extends about 7 miles north-north-westward and terminates in Mont Saint Angelo (*Lat.* 42° 28' N., *Long.* 9° 24' E.), 3,993 feet (1,217^m1) high with a square summit, the northern face of which is perpendicular.

Fleuve Golo flows into the sea about 6½ miles north-westward of Mont Saint Angelo, and Rivière de Bevinco flows into Étang de Biguglia about 6 miles farther northward. Between these two rivers, the mountainous mass of Mont Taffoni may be identified by its triple peaks, of which the centre one, 3,665 feet (1,117^m1) high, resembles a citadel; the village of Borgo lies on its eastern slopes. The conical Mont Zuccarello, 3,130 feet (954^m0) high, rises about 4 miles northward of Mont Taffoni, and the flat-topped Le Pigno, 3,140 feet (957^m1) high, about a similar distance farther northward and about 2 miles westward of Bastia.

Northward of Bastia, the cliffs on the eastern side of Presqu'île du Cap Corse are backed by a high mountain ridge of which the most prominent peaks are Mont Pruno, 4,062 feet (1,238^m1) high, about 3¾ miles north-westward of Bastia; Mont Stello, 4,281 feet (1,304^m8) high, about 2¾ miles farther north-north-eastward; Mont Cipolla, 4,045 feet (1,232^m9) high, about 2½ miles north-north-westward of Mont Stello; and Mont Alticcione, 3,733 feet (1,137^m8) high, about 2½ miles northward of Mont Cipolla and about 9 miles southward of Cap Grosso.

Golfe de Santa Manza.—Danger.—Anchorage.—Golfe de Santa Manza is entered between Pointe Capicciolo and Pointe de Rondinara, a rounded and reddish-coloured point about 2½ miles north-north-eastward, and extends about 2½ miles south-westward to Plage de Santa Manza at its head. Pointe de Rondinara is the extremity of a peninsula connected with the mainland by a low and narrow

Chart 1131.

isthmus, southward of which is a small cove which is used as a landing place, while northward of it is Port Rondinara, a small bay in which the depths are shoal.

- 5 Cap Bianco, composed of white cliffs which contrast with the reddish-coloured Pointe de Rondinara, lies on the western side of the gulf about $1\frac{1}{2}$ miles westward of Pointe Capicciolo. A rocky spit on which the depths are less than 5 fathoms (9^m1) extends about $4\frac{1}{2}$ cables north-eastward of the cape and a $1\frac{1}{2}$ -fathom (2^m3) rocky patch lies close to its extremity.

- Anchorage, sheltered from all but winds between north and east, may be obtained in Golfe de Santa Manza over a bottom of sand and weed, good holding ground. Vessels anchor about 2 cables north-westward of Pointe delle Nave, a point on the south-eastern shore of the gulf marked by a white rock and situated about $1\frac{1}{2}$ miles south-westward of Pointe Capicciolo. Small vessels can anchor off Plage de Santa Manza at the head of the gulf, where they are sheltered from all except north-easterly winds.

Pointe de Rondinara to Pointe de Chiappe.—Danger.—

- 20 **Anchorage.**—Pointe Sponsaglia (*Lat.* $41^\circ 29' N.$, *Long.* $9^\circ 18' E.$), on which stand the prominent ruins of a tower, lies about $1\frac{1}{2}$ miles north-north-eastward of Pointe de Rondinara. Porto Nuovo, about $1\frac{1}{2}$ miles north-westward, and Golfe de Santa Giulia, about $2\frac{1}{2}$ miles northward, of Pointe Sponsaglia, are separated by the northern and eastern slopes of Sommet de Rafaello.

- About $1\frac{1}{2}$ miles north-eastward of the northern entrance point of Golfe de Santa Giulia is Pointe d'Asciajo, a rocky projection fringed with above-water and sunken rocks. Between Pointe d'Asciajo and Pointe Cerbicale, about $1\frac{1}{2}$ miles north-eastward, the coast forms a slight bight at the head of which is a sandy beach broken about three-quarters of a mile north-eastward of Pointe d'Asciajo by a rocky point, close southward of which lies the rocky Île de la Folaca.

- A rocky bank on which the depths are less than 5 fathoms (9^m1) fronts the coast between Pointe d'Asciajo and Pointe Cerbicale and extends in places as much as half a mile offshore. Pointe de Chiappe light-structure, *see* below, in line with the extremity of the coast close northward of Pointe Cerbicale, bearing 022° , leads south-eastward of this bank.

- Mouillage de Columbara, situated off the beach south-westward of Pointe Cerbicale, affords anchorage with good holding ground, sheltered from northerly winds as far round as north-east. A group of rocks, 2 feet (0^m6) high, lies close off the beach, about three-quarters of a mile westward of Pointe Cerbicale.

- From Pointe Cerbicale, the coast trends north-north-eastward for about $2\frac{1}{2}$ miles to Pointe de Chiappe. Îlot Farina lies close inshore about $1\frac{1}{2}$ miles north-north-eastward of Pointe Cerbicale. *See* view facing page 197.

- Light.—Radiobeacon.**—A light is exhibited, at an elevation of 217 feet (66^m1), from a white square tower and dwelling, 52 feet (15^m8) in height, situated about $2\frac{1}{2}$ cables south-westward of the extremity of Pointe de Chiappe. A radiobeacon transmits from a pylon, painted in red and white and situated close to the light-structure.

- Off-lying islands and dangers.—Buoys.**—Île du Toro, 131 feet (39^m9) high, lies about $4\frac{1}{2}$ miles east-north-eastward of Pointe Spon-

Chart 1131.

saglia; it is surrounded by rocks, the westernmost of which has a summit shaped like a finger. Danger du Toro, a rock with a depth of $1\frac{1}{2}$ fathoms (2^m7) over it, lies about half a mile eastward of Île du Toro. A cylindrical buoy, painted red with a white horizontal band and surmounted by two red cones, points down, is moored close south-westward of Danger du Toro. In 1949, this buoy was not in place. 5

Îles Cerbicales are a group of five islands surrounded by above-water and sunken rocks. Île Pietricaggiosa, 33 feet (10^m1) high, the southernmost, lies about $1\frac{1}{4}$ miles south-south-eastward of Pointe Cerbicale; Île 10 Piana, about half a mile farther north-eastward, is 112 feet (34^m1) high; Île Maestro Maria, 23 feet (7^m0) high and flat, lies about one cable north-eastward of Île Piana; Île Forana, about a quarter of a mile farther north-eastward, is 112 feet (34^m1) high; and Île de la Vacca, the easternmost of the group, is pointed, 69 feet (21^m0) high, and lies about 15 half a mile east-south-eastward of the southern extremity of Île Forana.

Danger de la Vacca is a rocky bank with two shoal heads of which the northern, with a depth of $2\frac{1}{2}$ fathoms (4^m6) over it, lies about 6 cables south-eastward, and the southern, with a depth of 13 feet (4^m0) over it, lies about 8 cables south-south-eastward, of Île de la 20 Vacca (*Lat.* $41^\circ 33' N.$, *Long.* $9^\circ 24' E.$). A conical buoy, the upper part painted red and the lower part white, and surmounted by two red cones, bases together, is moored between these shoal heads.

Firing danger area—A firing danger area is situated off the coast between Pointe Capicciolo and Pointe Saint Cyprien, about 12 miles 25 north-north-eastward.

Chart 1126, plan of Gulf of Porto Vecchio.

GOLFE DE PORTO VECCHIO.—**Lights.**—**Aspect.**—Golfé de Porto Vecchia is entered between Pointe de Chiappe and Pointe Saint Cyprien, about $1\frac{1}{4}$ miles north-north-westward. It affords the best 30 anchorage on the eastern coast of Corsica.

The light on Pointe de Chiappe is described on page 198. A disused signal station is situated about one cable westward of the light-structure.

A light is exhibited, at an elevation of 80 feet (24^m4), from a white 35 square tower and dwelling, 37 feet (11^m3) in height, situated on Pointe Saint Cyprien.

Chart 1131.

Vessels approaching the gulf from eastward will identify Mont Calva, 4,521 feet ($1,378^m0$) high, about $8\frac{1}{2}$ miles north-westward of 40 Pointe Saint Cyprien. Overlooking a plain at the head of the gulf and about 9 miles westward of Pointe Saint Cyprien, is Sommet della Vacca Morta (page 197), about $1\frac{1}{4}$ miles east-north-eastward of which is a prominent white house with green shutters. Sommet Compoelli, very steep and forming part of the same range, rises about $3\frac{1}{4}$ miles 45 south-westward of Sommet della Vacca Morta. On a closer approach, vessels may distinguish the light-structure and disused signal station on Pointe de Chiappe; Îles Cerbicales, with the detached Île du Toro south-eastward of them and the isolated Sommet Cerchio behind them; and, farther southward, Punta dell' Oro. 50

Chart 1126, plan of Gulf of Porto Vecchio.

Dangers in approach.—**Beacon-towers.**—Roches de Chiapino, a group of above-water rocks between $1\frac{1}{2}$ and 2 cables north-eastward

Charts 1780, 2158a, 449.

Chart 1126, plan of Gulf of Porto Vecchio.

of Pointe de Chiappe, are marked by Tourelle Chiapino, a masonry beacon-tower, 41 feet (12^m5) high, painted in red and black horizontal bands and surmounted by a sphere.

- 5 Roches de Pecorella, a group of above-water and sunken rocks, about three-quarters of a mile east-south-eastward of Pointe Saint Cyprien, are marked by Tourelle Pecorella, a masonry beacon-tower, 35 feet (10^m7) high, painted in red and black horizontal bands and surmounted by a sphere. Rocks extend about three-quarters of a cable southward, 10 and 1½ cables northward, of Tourelle Pecorella, and a detached 1¼-fathom (2^m3) rocky patch lies about three-quarters of a cable eastward of it. Roches de Pecorella are covered by the *red* sector of Pointe de Chiappe light between the bearings of 186° and 200°, and also by a *red* sector of Pointe Saint Cyprien light between the bearings of 281° 15 and 299°.

- Outer part of gulf.—Dangers.—Buoy.**—Between Pointe de Chiappe and Pointe d'Arena, about 2¼ miles west-north-westward, the southern shore of the gulf is composed of high cliffs interrupted by sandy beaches, the most prominent of the latter being Marine d'Arghi, 20 situated about 1¼ miles westward of Pointe de Chiappe (*Lat.* 41° 36' N., *Long.* 9° 22' E.). A sandy spit extends about half a cable north-north-westward from Pointe d'Arena, and the point should be given a wide berth as the depths in its vicinity are liable to change. Close within Pointe d'Arena, the coast rises steeply to a range of hills about 650 feet 25 (198^m1) high.

On the northern side of the gulf, a rocky bank with depths of less than 3 fathoms (5^m5) over it fronts Pointe Saint Cyprien and extends about 2 cables south-westward of the point.

- Between Pointe Saint Cyprien and Pointe de Benedetto, about 30 1¼ miles westward, the northern shore of the gulf forms Anse de Timbro le Machie, a shoal bight filled by a rocky bank on which the depths are less than 3 fathoms (5^m5), which extends as much as half a mile off the head of the bight. On the western part of this bank, about 2 cables south-westward of Pointe de Benedetto, is Banc de Benedetto, with a 35 least depth of one foot (0^m3) over it. A buoy, painted black and surmounted by a cone, is moored in a depth of about 3¼ fathoms (5^m9) close off the south-western extremity of the rocky bank, about 4¼ cables south-south-westward of Pointe de Benedetto.

- Pointe de Benedetto is the eastern extremity of a salient peninsula, 40 148 feet (45^m1) high, situated on the southern side of the delta of Rivière de l'Osa, which flows through a plain into the northern side of the gulf. Baie de Stagnolo, which is shallow, is entered between the western extremity of the peninsula, about half a mile westward of Pointe de Benedetto, and a point about 4 cables westward; the 45 western side of the bay is dominated by a hill 482 feet (146^m9) high, about three-quarters of a mile west-north-westward of the western entrance point.

Head of gulf. — Dangers. — Beacon-towers. — Buoys. —

- The head of the gulf is entered between Pointe d'Arena and the western 50 entrance point of Baie de Stagnolo about 8½ cables north-westward, and extends about 1¼ miles south-westward from the entrance. The town of Porto Vecchio lies at the western corner of the head, and at the opposite corner, about three-quarters of a mile south-eastward of the town, is the low and marshy mouth of Rivière de Stabiaccio.

Charts 1131, 1780, 2158a, 449.

Chart 1126, plan of Gulf of Porto Vecchio.

Château de Georgesville, a large white house surrounded by trees, stands on the north-western shore about half a mile northward of the town, and close inshore on the opposite side, about 9 cables south-westward of Pointe d'Arena, is Îlot Ziglione, 43 feet (13^m1) high and 5 wooded.

The head of the gulf is shallow and the close approaches to the town of Porto Vecchio are foul ; some of the dangers are marked by black, or red and white, beacon-towers, the positions of which can best be seen on the chart. The best channel is close to the south-eastern shore 10 and the 3-fathom (5^m5) contour line is marked in places by buoys, the positions of which may best be seen on the chart.

Some red mooring buoys for the use of aircraft are moored close inshore at the head of the harbour.

Directions.—Anchorage.—There are two approach channels to 15 Golfe de Porto Vecchio : Passe de l'Est, between Roches de Chiapino and Roches de Pecorella, and Passe Nord, between Roches de Pecorella and Pointe Saint Cyprien. Vessels using Passe de l'Est should pass midway between Tourelle Chiapino and Tourelle Pecorella.

Vessels using Passe Nord should, from a position eastward of Îlot 20 Cornuta (page 202), keep Sommet Cerchio bearing 220° and in line with the western end of the beach at Marine d'Argi ; when Pointe Saint Cyprien light-structure bears 000°, course should be shaped westward into the gulf.

The outer anchorage lies eastward of the meridian of Pointe de 25 Benedetto (*Lat. 41° 37' N., Long. 9° 20' E.*) and south-westward of Pointe Saint Cyprien. This anchorage is exposed to easterly winds but can accommodate large vessels in depths of from 5½ to 11 fathoms (10^m1 to 20^m1). There is good holding ground of mud and weed throughout the gulf. 30

Vessels drawing less than 20 feet (6^m1) can proceed to an inner anchorage near the head of the gulf, north-eastward of the town of Porto Vecchio. This anchorage is sheltered from all winds, but those from westward raise squalls which are dangerous to boats. Vessels proceeding to the inner anchorage should pass southward of the black 35 buoy, moored southward of Banc de Benedetto, give Pointe d'Arena a wide berth, pass about one cable off the point about 2½ cables south-westward of Pointe d'Arena, and between the two buoys moored about 2 cables farther south-westward, whence a course should be shaped for anchoring about 2 cables northward or north-westward of Îlot 40 Ziglione, in depths of from 20 to 28 feet (6^m1 to 7^m0), mud and weed. Approach to the inner anchorage is inadvisable at night.

Town.—Quayage.—Dangers.—The town of Porto Vecchio is built on a hill and is surrounded by walls ; from a distance it resembles a pointed rock. In 1932, the population was about 2,000. 45

The shore abreast the town is faced by a quay on which there is a landing-place for boats. The approaches to this quay are encumbered by rocks through which there are two channels. The southern channel is marked by Tourelle Cioccia, a beacon-tower, painted in red and white chequers ; vessels should pass close northward of this tower 50 and should thence steer for the end of the quay farthest from the landing place, in order to pass southward of the dangers surrounding Îlot Ficaja. The northern channel is marked on its northern side by three black beacon-towers, each surmounted by a cone.

Charts 1131, 1780, 158, 2158a, 449.

Chart 1126, plan of Gulf of Porto Vecchio.

About half a mile south-eastward of the town two parallel wooden jetties, 377 feet (114^m9) apart, project about 800 feet (243^m8) north-eastward from the shore at the head of the gulf; the extremities of these jetties are joined by a third jetty, 36 feet (11^m0) wide, forming a quay which is accessible to vessels of a draught not exceeding 15½ feet (4^m7).

Fresh provisions may be obtained in Porto Vecchio in winter and fresh water is available at a cork factory close to the quay abreast the town.

COAST.—Golfe de Saint Cyprien.—Anchorage.—Golfe de Saint Cyprien is entered between Pointe Saint Cyprien and Pointe d'Araso, about 1½ miles north-north-eastward. Îlot Cornuta, reddish and pointed, and Îlot Saint Cyprien, 75 feet (22^m9) high with a rounded top, lie about 2½ cables southward and 3¼ cables west-south-westward, respectively, of Pointe d'Araso. The shores of the gulf are fronted by an extensive bank on which the depths are less than 3 fathoms (5^m5), which in places extends as much as 3½ cables offshore; some above-water and sunken rocks lie on the north-western part of this bank. Small craft may obtain anchorage in Golfe de Saint Cyprien, in depths of about 3½ fathoms (5^m9), with the southern extremity of Îlot Saint Cyprien (*Lat.* 41° 38' N., *Long.* 9° 22' E.) bearing about 088°. The anchorage is sheltered from winds from west through north to north-east, but the holding ground is not good.

Chart 1131.

Coast.—From Pointe d'Araso, the coast trends north-north-eastward for about 2 miles to Île Pinarello, an island lying close off the mainland. Pointe Capicciola is the extremity of a narrow tongue of land, 98 feet (29^m9) high and of reddish colour, which projects about 3 cables south-eastward from the coast about 9 cables north-north-eastward of Pointe d'Araso. Its extremity slopes gradually to the sea and there is a rock close off it. The southern side of Île Pinarello forms the northern shore of a shallow bight named Anse de Cola.

Chart 1126, plan of Pinarello bay.

Golfe de Pinarello.—Anchorage.—Golfe de Pinarello is entered between Île Pinarello, 167 feet (50^m9) high, on which stands a prominent square tower, and a point on the mainland about 1½ miles northward. Rochers de la Roscana, a group of red rocks with whitish tops, of which the largest is 66 feet (20^m1) high, lie in the entrance to the gulf, about 7 cables north-north-eastward of Île Pinarello. The northern and western shores of the gulf are fronted by a bank on which the depths are less than 3 fathoms (5^m5), which, with some above-water as well as sunken rocks on it, extends in places about 3 cables offshore.

During westerly winds, small coasters obtain anchorage, in depths of from 6½ to 8 fathoms (11^m9 to 14^m6), near the middle of the gulf, north-westward of Île Pinarello. There is no shelter from easterly winds and the holding ground is poor.

Chart 1131.

Golfe de Pinarello to Alistro.—Coast.—Between the northern entrance point of Golfe de Pinarello and Pointe de Fautea, about 1½ miles northward, the coast is low. Tour de Fautea dominates the rocky promontory of which Pointe de Fautea is the eastern extremity

Chart 1131.

and is visible from some distance seaward ; Île de Fautea, 105 feet (32^m0) high, lies close off the point.

Anse de Tarco lies about 2 miles northward of Pointe de Fautea. Close within a sandy beach at the head of this cove, a road bridge with three arches crosses a river ; in 1949, this bridge was partly demolished. 5

Anse de Favone, about 1½ miles northward of Anse de Tarco, lies at the mouth of a valley which extends westward to the foot of Sommet Batachione, about 4 miles westward. This peak is 3,209 feet (978^m1) high, shaped like a thimble and surmounted by a triangulation pillar. 10 A road bridge with two arches, some dilapidated houses on the northern shore of the bay, and a chapel with a belfry on its northern entrance point may be distinguished from an offing.

Anse de Canelle, about 1½ miles northward of Anse de Favone, may be recognised by some reddish cliffs backing a beach at its head. There 15 is a bridge in ruins close northward of this cove.

A very prominent bridge stands at the head of the small Anse de Manichino, about 2½ miles northward of Anse de Canelle. The characteristic peak of Monte Santo rises to an elevation of 1,972 feet (601^m1) about 2 miles west-south-westward of this bridge, and on a buttress of 20 the mountain, about three-quarters of a mile north-eastward of the summit, is the village of Sari.

About one mile northward of Anse de Manichino is the village of Solenzara (*Lat.* 41° 52' N., *Long.* 9° 24' E.), situated on the southern side of the mouth of Rivière de la Solenzara. Two factory chimneys 25 and several buildings in the village are prominent from seaward, and a large pyramidal triangulation beacon stands about half a mile westward of the village. Rocher de Mozza, a huge and prominent column of rock, stands on a summit of the same name, at an elevation of 3,688 feet (1,124^m1), about 4½ miles westward of the village. The 30 mouth of La Solenzara forms an estuary which is accessible to boats in fine weather ; they should always hug the southern bank.

Between Solenzara and Tour d'Alistro, about 25 miles northward, the coast is low and marshy and there is no sheltered anchorage off it. From the mouth of La Solenzara, the coast trends about 3 miles north- 35 ward to the mouth of Rivière de Travo ; a large bridge crosses this river about one mile inland and close northward of the bridge is a prominent white chapel. About 1½ miles northward of the river and about 3½ miles inland, are the heights of Ventiseri, on which stand a square belfry and a triangulation beacon. 40

Ruisseau de la Chiola flows into the sea midway between La Solenzara and Rivière de Travo ; half-way up a hill about 1½ miles west-south-westward of its mouth, is Pré d'Agnello, a large white house which is a good landmark.

Rivière de Fiumorbo enters the sea about 5½ miles north-north-eastward of the mouth of Rivière de Travo ; there are depths of 45 5 fathoms (9^m1) about one mile offshore along this part of the coast and it should be given a berth of at least 1½ miles. In the village of Calsarello, situated on the southern side of the mouth of the Fiumorbo, is a white building with a round tower surrounded by pillars, which 50 is visible from some distance, and about half a mile farther south-westward is a rose-coloured tower resembling a lighthouse. Farther inland, about 5½ miles west-north-westward of Calsarello, is the village of Prunelli di Fiumorbo in which there is a domed belfry ; about

Chart 1131.

2 miles westward of this latter village and at the head of a valley, the square belfry of Isolaccio may be distinguished.

About one mile north-westward of the mouth of the Fiumorbo are the ruins of Tour Vignale set in the midst of pine trees and not easily discerned from seaward. About 2 miles north-north-eastward of Tour Vignale is Étang d'Urbino, a lagoon separated from the sea by a narrow ridge on which is a belt of trees. A masonry daymark stands on the southern side of Étang d'Urbino, about half a mile inland.

10 Fleuve Tavignano enters the sea about 7 miles north-eastward of Tour Vignale. The village of Aleria, situated about $1\frac{1}{2}$ miles westward of its mouth, is dominated by Fort d'Aleria, with a belfry built on a hill which has a precipitous northern side. About half a mile south-westward of the fort is the old penitentiary of Casabianda, with an entrance surmounted by a bell-turret which is prominent from seaward, and about half a mile northward of the fort, the village of Cateragio may be identified from seaward by a terrace with an ornamental balustrade. A group of houses on the northern side of the entrance to Fleuve Tavignano is known as Marine d'Aleria.

20 Between Marine d'Aleria and Tour Bravone (*Lat.* $42^{\circ} 12' N.$, *Long.* $9^{\circ} 33' E.$), about 5 miles northward, there are several rocks, both above-water and sunken, situated close inshore; Padulone, the southernmost of these rocks, is one foot (0^m3) high and lies close off Marine d'Aleria.

25 The chapel of Sainte Marie stands on a hill about 100 feet (30^m5) high, on the eastern side of Étang de Diane, about 2 miles northward of Marine d'Aleria. The mouth of this lagoon is practicable for boats in winter and may be identified by a portion of a wall, all that remains of Tour de Diane, about 4 cables south-eastward of the chapel. On the south-eastern shore of the lagoon, about one mile southward of the chapel, is the daymark of Diane.

About 3 miles northward of the chapel of Sainte Marie, is a coastal hill about 158 feet (48^m1) high, surmounted by the ruined Tour Bravone and overlooking the marshy mouth of Rivière de Bravone, about half a mile northward.

About $1\frac{1}{2}$ miles northward of Tour Bravone, rocks extend about 4 cables north-eastward from the coast. Maison Giustignana, a low house, with a roof sloping to one side only, stands by itself alongside the road about 2 miles northward of Tour Bravone. About $1\frac{1}{2}$ miles northward of Maison Giustignana are the ruins of Tour d'Alistro and on a plateau about three-quarters of a mile north-westward of these ruins are the light-structure and the disused signal station of Alistro.

Light.—A light is exhibited, at an elevation of 308 feet (93^m9), from a grey octagonal granite tower and white dwelling, 82 feet (25^m0) in height, situated on a plateau at Alistro.

Alistro to Bastia. — **Beacons.** — **Buoy.** — **Anchorage.** —

Between Alistro and Bastia, about 27 miles northward, the coast is low and backed by mountains at from 2 to 5 miles inland. There are no off-lying dangers on this stretch of coast, but vessels are advised to keep eastward of the $5\frac{1}{2}$ -fathom (10^m1) contour line, which passes about half a mile offshore.

Between Tour d'Alistro and Marine de Prunete, about $3\frac{1}{2}$ miles northward, the coast is bare except for the ruins of Tour Florentine, about midway along the stretch. Rivière d'Alesani enters the sea

Chart 1131.

about 2 cables northward of Tour Florentine. In the interior, about 10 miles west-north-westward of Tour Florentine, and at the head of the valley containing Rivière d'Alesani, Pointe de Caldane rises to an elevation of 5,663 feet (1,726^m1). About 3 miles south-eastward of this peak is Rocher de Muteri, 4,085 feet (1,245^m1) high, the rugged summit of which shows above the surrounding heights. 5

From Marine de Prunete, the coast trends northward for about 3 miles to Marine de Padulella, which consists of about a dozen houses, one of which is very white, standing close within a greyish beach. 10 About one mile northward of Marine de Prunete is Maison de la Nuit, a yellow house on a small hill close to the coast; in 1948, a large tree stood close northward of the house. The village of Cervione, which is overlooked by a remarkable hill, lies about 1½ miles westward of Maison de la Nuit. In this vicinity, the following belfries may be 15 distinguished inland: Sainte Marie Poggio, about 2½ miles south-westward; Saint Nicolas, about 1½ miles west-south-westward; Saint Jean, about 2½ miles westward; and Sainte Lucie, about 1½ miles west-north-westward, of Marine de Padulella.

From Marine de Padulella, the coast trends about 3¾ miles northward to the mouth of Rivière Fium Alto. The small chapel of Saint Michel stands about 1½ miles, and the little village of Figareto (*Lat.* 42° 24' N., *Long.* 9° 32' E.), about 2¼ miles, northward of Marine de Padulella. A factory chimney may be distinguished close southward 25 of the mouth of Fium Alto, and in the interior may be seen several villages, of which one, Pero Casevecchie, has a double belfry.

Fleuve Golo enters the sea about 5 miles northward of the mouth of Rivière Fium Alto; northward of the latter river the mountains recede from the coast which becomes low and flat for as much as 4 miles inland westward of the mouth of Fleuve Golo. Two beacons, not very 30 prominent from seaward, are established on this stretch. The front beacon is 30 feet (9^m1) in height, surmounted by a white disc and situated about 1½ miles northward of the mouth of Rivière Fium Alto; the rear beacon is 80 feet (24^m4) in height, surmounted by a white triangle and situated about 1½ miles westward of the front beacon. 35 These beacons and the summit of Mont Sant'Angelo are in line when bearing 270°. The only other landmarks on this stretch are several villages at the foot, and on the eastern slopes, of Mont Sant'Angelo, situated about 6 miles west-north-westward of the mouth of Rivière Fium Alto; of these, the village of Loreto di Casinca, situated about 40 one mile north-north-eastward of the summit of the mountain, may be identified by its elevated situation of 2,635 feet (803^m1).

A black cylindrical buoy is moored about 4½ miles east-north-eastward of the front beacon.

From the mouth of Fleuve Golo, the coast trends northward for 45 about 2½ miles to Pointe d'Arco, marked by a ruined tower which is not very prominent from seaward, and thence about 6¾ miles north-north-westward to the entrance to Étang de Biguglia. This lagoon extends nearly 7 miles south-south-eastward from its entrance to a position about half a mile west-south-westward of Pointe d'Arco, 50 being separated from the sea by a ridge of sand dunes, covered with vegetation. Maison Pinetta, consisting of two low buildings with red roofs, stands on the ridge, about 1¾ miles north-north-westward of Pointe d'Arco, and Maison Casone, with a terraced balcony, stands

Chart 1131.

about 2 miles farther north-westward. In the interior, the belfries of Borgo and Ortale, situated about $4\frac{1}{2}$ miles westward, and the same distance west-north-westward, respectively, of Pointe d'Arco, and the village of Furiani, situated on a hill about $7\frac{1}{2}$ miles westward of the entrance to Étang de Biguglia, and dominated by a white square belfry, are all good landmarks.

There is anchorage in Mouillage d'Arco, situated about 2 miles northward of Pointe d'Arco, in depths of about 11 fathoms (20^m1), weed and muddy sand, good holding ground. A good berth is with the belfry of Sainte Lucie, about three-quarters of a mile north-westward of Bastia, in line with the belfry of Sainte Marie in the southern part of that town, bearing 327° , and Maison Casone in line with Mont Zuccarello or the belfry in the village of Biguglia, bearing about 279° .

From the entrance to Étang de Biguglia (*Lat.* $42^\circ 40' N.$, *Long.* $9^\circ 27' E.$), the coast trends northward for about 2 miles to the port of Bastia, which is overlooked by Le Pigno (page 197).

Chart 1126, plan of Bastia.

BASTIA.—Caution.—The town of Bastia lies stretched along the coast between 2 and $2\frac{1}{2}$ miles northward of the entrance to Étang de Biguglia. The spire of Sainte Marie church, situated in the citadel which lies at the southern end of the town, is prominent from seaward. The port of Bastia consists of two harbours, Vieux Port, on the northern side of the citadel and abreast the southern part of the town, partly sheltered from eastward by Jetée du Dragon and by Môle Génois, and Nouveau Port or Port Saint Nicolas, which is sheltered by Jetée Saint Nicolas.

The port was extensively damaged during the recent hostilities and there are numerous wrecks. Entry should not be attempted without local knowledge.

Pilotage.—The northern limit of the pilotage area is an anchorage in Anse de Toga, a bight on the northern side of Nouveau Port, and the southern limit is an anchorage in Anse de Porto Vecchio, close southward of the citadel. The pilotage station is situated in Vieux Port.

Vieux Port. — Lights. — Depths. — Quayage. — Vieux Port is protected from south-eastward by Jetée du Dragon, which extends about three-quarters of a cable north-north-eastward from the north-eastern bastion of the citadel, and from north-eastward by Môle Génois, which extends about one cable south-south-eastward to within about half a cable of the head of Jetée du Dragon, but easterly and north-easterly seas penetrate between the heads of these jetties and render untenable the outer part of Vieux Port. Access to this harbour is not easy.

A light is exhibited, at an elevation of 54 feet (16^m5), from a grey circular tower, 36 feet (11^m0) in height, situated on the head of Jetée du Dragon.

A light is exhibited, at an elevation of 40 feet (12^m2), from a white circular tower, 23 feet (7^m0) in height, situated on the head of Môle Génois.

Two rocks, each with a depth of $2\frac{1}{2}$ fathoms (5^m0) over them, lie about three-quarters of a cable north-north-eastward, and one cable north-eastward, respectively, of the head of Môle Génois. The depths in Vieux Port are shoal and the harbour is not accessible to vessels

Charts 1131, 1780, 158, 2158a, 449.

Chart 1126, plan of Bastia.

exceeding 12 feet (3^m7) in draught, and there are not sufficient depths at the head of the harbour for such craft. During easterly and north-easterly winds turning in this harbour is very difficult and in such circumstances vessels are recommended to anchor in Nouveau Port. 5
There are some buoys in Vieux Port.

There are two quays for working cargo, Quai de la Santé on the northern, and Quai du Sud on the south-western, side of the harbour. At the head of the harbour, between the ends of these quays, is a beach on which small craft are hauled up. 10

Only the eastern part of Quai de la Santé is available for berthing vessels but the eastern end of the quay is prolonged southward by Môle Génois, the inner side of which is faced by a quay.

Vessels usually secure with their sterns to the quays but vessels in Vieux Port should guard against Le Libeccio, a wind which comes in squalls from Le Pigno (page 197). If entering while Le Libeccio is blowing, it is advisable to lie head to wind instead of head seaward, as is usual. During Le Libeccio, the best berth is at Quai du Sud (*Lat.* 42° 42' N., *Long.* 9° 27' E.), but the hawsers should be doubled and, if possible, backed up by a cable; at Quai de la Santé there is a danger 20 of damage to the ship's side as the face of the quay is irregular, due to war damage.

Nouveau Port. — Lights. — Depths. — Quayage. — Nouveau Port or Port Saint Nicolas is formed by Jetée Saint Nicolas, which extends eastward, south-eastward and southward for about 4½ cables 25 from Pointe des Jésuites, at the northern end of the town. It is accessible during all weathers, except during Le Libeccio, and affords safe shelter in the northern part against a heavy sea. Strong easterly winds raise a surf and very choppy sea.

A light is exhibited, at an elevation of 36 feet (11^m0), from a white 30 tower, situated on the head of Jetée Saint Nicolas.

A light is exhibited from the south-eastern corner of Traverse du Fango, on the western side of the harbour, about 2 cables north-north-westward of the head of Jetée Saint Nicolas.

There are depths of from 4½ to 5 fathoms (7^m9 to 9^m1), in the middle 35 of the harbour.

Quays extend along the western side northward of Traverse du Fango and along the northern and north-eastern arms, and the inner part of the southern arm, of Jetée Saint Nicolas. There are some landing steps for boats at the southern end of Place Saint Nicolas, 40 situated between Traverse du Fango and Promenade des Quais. The depths alongside Place Saint Nicolas are very shoal; a red conical buoy marks the edge of the 3-fathom (5^m5) line in its approach.

Quai de Fango, situated on the western side of the harbour northward of Traverse du Fango, is reserved for berthing mail vessels; in 1950, 45 a length of about 800 feet (243^m8) from its southern end was available to vessels not exceeding 23 feet (7^m0) in draught, and small craft could be berthed at the northern end of the quay, heading west with their bows secured to the quay.

Quai de Rive extends from the northern end of Quai de Fango to the root of the northern arm of Jetée Saint Nicolas; in 1949, this quay was 50 only accessible to small craft of less than 13 feet (4^m0) draught.

Quai Nord is the southern side of the northern arm of Jetée Saint Nicolas; in 1949, this quay was obstructed by a wreck sunk in an

Chart 1126, plan of Bastia.

upright position, but vessels not exceeding 262 feet (79^m9) in length and 20 feet (6^m1) in draught could berth alongside the wreck.

Quai Nord-est, the north-eastern arm of Jetée Saint Nicolas, is 538 feet (164^m0) long, but was partly destroyed and obstructed by a wreck during hostilities. In 1949, a length of 344 feet (104^m8) at the south-eastern end was accessible to vessels not exceeding 21 feet (6^m4) in draught.

Quai Est, the inner part of the southern arm of Jetée Saint Nicolas, is 623 feet (189^m9) long, but its southern end is obstructed by a sunken wreck. In 1949, a length of 443 feet (135^m0) from its northern end was accessible to vessels not exceeding 28 feet (8^m5) in draught.

Town.—Port facilities.—Life-saving.—In 1948, the population of Bastia (*Lat.* 42° 42' N., *Long.* 9° 27' E.) was about 36,000. There is a military and a civil hospital in the town. The Captain of the Port's offices are at the north-western corner of Nouveau Port and the Office of the French Naval representative is on Quai de la Santé in Vieux Port.

Small quantities of coal and of liquid fuel are stocked.

Fresh provisions are plentiful and water is laid on to all quays. The quays in Nouveau Port are normally all served by the railway, but in 1949, the latter was unusable due to war damage.

Urgent small repairs can be undertaken. There is a 3½-ton mobile crane on the quays.

There is regular sea communication with the continent of Europe and Bastia is connected with the railway system of Corsica.

There is regular air service with France from Poretta aerodrome, about 12 miles southward of the town. There are mooring facilities for seaplanes in Étang de Biguglia.

A line-throwing apparatus is maintained at Bastia, *see* page 12.

30 *Chart 1131.*

COAST.—Pointe des Jésuites to Port de Macinaggio.—Dangers.—Between Pointe des Jésuites and Port de Macinaggio, about 15 miles northward, the coast is composed of rocky cliffs broken at intervals by beaches.

Pointe Toga lies about 3½ cables northward of Pointe des Jésuites; rocks extend about 1½ cables south-eastward of the former point and about one cable north-eastward of the latter. The southern arm of Jetée Saint Nicolas kept in line, bearing about 190°, leads clear eastward of these dangers.

From Pointe Toga, the coast trends about 1½ miles northward to Tour du Miomo, a round tower standing on a rocky point close to a group of houses, and overlooking a small beach. Southward of this beach, the coast rises moderately steeply to the pointed Sommet Cornichiola, 925 feet (281^m9) high, situated about 6 cables west-south-westward of Tour du Miomo. The belfry of San Martini di Lota stands in the valley of Griscione, about half a mile westward of Sommet Cornichiola and is visible from an offing.

From Tour du Miomo, the coast trends north-north-eastward for about 2 miles to Marine d'Erbalunga, where there is a village of the same name. The cove is protected from northward by a rocky point on which stands a group of old buildings terminating seaward in a ruined tower. On the coast, about one mile southward of the cove, is the village of La Vasina (*Lat.* 42° 46' N., *Long.* 9° 28' E.), and about

Charts 1131, 1780, 158, 2158a, 449.

Chart 1131.

3 cables northward of the cove is a large convent. The village of Poretto lies about half a mile north-westward, and that of Pozzo, with a distinctive belfry, about three-quarters of a mile north-north-westward, of La Vasina. In the village of Erbalunga, a church with a triangular Grecian front may be seen, and farther inland, about three-quarters of a mile north-north-westward of the village, the isolated belfry of Brando, and the detached belfry of the old convent of Saint François, about 2 cables farther south-eastward, may also be distinguished.

Chart 3901.

From Erbalunga, the coast trends about $1\frac{1}{2}$ miles north-north-eastward to Cap Sagro; Mont Merizatodio, 2,552 feet (777^m8) high, situated about $1\frac{1}{2}$ miles westward of the cape, dominates the vicinity. Tresoro, a rocky hill on which stands a pyramid, lies about 6 cables south-westward of Cap Sagro; a château with a pink square tower lies about 2 cables farther westward; and the ruins of Pietre Scritte, a watch-tower near which stands a pyramid, stand on a steep cliff about 3 cables westward of the château. About one mile south-south-westward of Cap Sagro are several mortuary chapels.

From Cap Sagro, the coast trends about $2\frac{1}{2}$ miles northward to Marine de Pietracorbara. A disused signal station stands close to the coast at an elevation of 446 feet (135^m9), about a quarter of a mile northward of Cap Sagro, and shows up well. The chapel of Saint Antonio and the belfry of Crosciano are situated about $2\frac{1}{2}$ miles west-north-westward and $1\frac{1}{2}$ miles north-westward, respectively, of Cap Sagro, and are prominent. Close to the coast about $1\frac{1}{2}$ miles northward of Cap Sagro, is the convent of Santa Catterina, with a tower in the shape of a clover leaf. About a quarter of a mile southward of the southern side of Marine de Pietracorbara are the ruins of Tour d'Aquila, on a hill close within the steep coast.

From Marine de Pietracorbara, the coast trends northward for about $5\frac{1}{2}$ miles to Marine de Meria. The village of Porticciolo stands on the rocky coast about 2 miles northward of Marine de Pietracorbara. About 6 cables southward of the village is Tour de Losse, and about $4\frac{1}{2}$ cables farther south-westward Sommet del Guinco rises to an elevation of 702 feet (214^m0) and is surmounted by a pyramid. From Porticciolo, where a very prominent pink building in the village may be distinguished, the coast trends about one mile northward to Marine de Luri, at the northern end of which is a small harbour with a group of houses among which is a large building with a white roof; about 2 cables farther southward is a bridge with two arches which is prominent from seaward. Tour de Sénèque, crowning a pointed peak about $2\frac{1}{2}$ miles westward of Marine de Luri, and the convent of Santa Lucia, situated on its slopes about 2 cables eastward of the tower, are both prominent, while Mont Alticcione (page 197) may be distinguished about $1\frac{3}{4}$ miles farther south-westward. At the southern end of a beach at the head of Marine de Meria is a group of houses, and an old mill may be seen on the rocky promontory forming the northern side of the cove. Sommet Castello, 1,575 feet (480^m1) high, situated about $1\frac{1}{2}$ miles west-south-westward of Marine de Meria, may be seen over the intervening hills.

From Marine de Meria, the coast trends north-north-westward for about $1\frac{1}{2}$ miles to Baie de Macinaggio (*Lat.* 42° 58' N., *Long.* 9° 28' E.).

Charts 1780, 158, 2158a, 449.

Chart 1126, plan of Tamarone and Macinaggio bays.

Baie de Macinaggio.—Light.—Anchorage.—Baie de Macinaggio is a slight bight on the southern side of Pointe de la Coscia, a projection on which is a mill, situated about 2 miles northward of Marine de Meria.

- 5 The village of Macinaggio is situated on the coast about half a mile southward of Pointe de la Coscia, and abreast the village is a small harbour, sheltered by two jetties; the harbour is accessible in the middle only to vessels not exceeding $6\frac{1}{2}$ feet (2^m0) in draught. Fresh water is available on the south-eastern jetty.
- 10 A light is exhibited, at an elevation of 33 feet (10^m1), from a concrete post on a hut, 26 feet (7^m9) in height, situated on the head of the south-eastern jetty.

- Anchorage may be obtained, in depths of from $3\frac{3}{4}$ to 5 fathoms (6^m9 to 9^m1), sand and weed, with a watch-tower on the root of the south-eastern jetty bearing 270° , distant about $2\frac{1}{4}$ cables. Northward of this berth, vessels are exposed to squalls blowing down the valley of Rogliano, and southward of it the holding ground is poor.

- Baie de Tamarone.—Anchorage.**—Baie de Tamarone is entered between Pointe de la Coscia and a point about $6\frac{1}{2}$ cables northward; this latter point rises steeply for a further 3 cables northward to Sommet de Tamarone, on which stands a pyramid. The bay affords good shelter from westerly winds and is more protected from these winds and from Le Libeccio than the anchorage off Port de Macinaggio.

- Vessels may obtain good anchorage in depths of 6 fathoms (11^m0), weed, with the pyramid on Sommet de Tamarone in line with a small house half-way up its slope, bearing about 338° , and a chapel in the northern part of the village of Macinaggio in line with Pointe de la Coscia, bearing about 209° .

- Baie de Tamarone to Pointe d'Agnello.—Islands and dangers.**
- 30 —**Anchorage.**—From the northern entrance point of Baie de Tamarone, the coast trends northward for about 6 cables to a point off which lie Îles Finocchiarola, and thence trends north-westward for about 2 miles to Pointe d'Agnello, the north-eastern extremity of Corsica.

- 35 Îles Finocchiarola consist of three islands surrounded by rocks, lying on a bank on which the depths are less than 5 fathoms (9^m1), which extends about 4 cables eastward from the coast. On the easternmost and largest island stand the prominent ruins of a tower, situated about 7 cables east-north-eastward of the pyramid on Sommet de Tamarone.

- 40 From the point off which lie Îles Finocchiarola, the coast trends west-north-westward for about 6 cables to Pointe de Santa Maria on which stands an old tower; about a quarter of a mile south-south-eastward of this tower is the chapel of Santa Maria. Between Pointe de Santa Maria and Pointe d'Agnello, about $1\frac{1}{2}$ miles north-westward, the coast is steep and rises to an elevation of 804 feet (245^m1) at Mont Campana, about one mile southward of Pointe d'Agnello.

- A rocky spit on which the depths are less than 3 fathoms (5^m5) extends about 4 cables east-north-eastward from Pointe de Santa Maria (*Lat.* $42^\circ 59' N.$, *Long.* $9^\circ 27' E.$). Danger of Santa Maria, with 50 a least depth of $2\frac{3}{4}$ fathoms (5^m0) over it, lies about half a mile northward of Pointe de Santa Maria, and Banc de Santa Maria, with depths of $5\frac{1}{4}$ fathoms (9^m6) over it, lies about $1\frac{1}{4}$ miles north-eastward of the same point. The sea breaks heavily on these dangers during bad weather.

Charts 1131, 1780, 158, 2158a, 449.

Chart 1126, plan of Tamarone and Macinaggio bays.

Rade de Santa Maria is comprised between Danger de Santa Maria, the coast, Îles Finocchiarola, and Banc de Santa Maria, and affords anchorage with moderately good shelter from westerly winds. A good berth is in depths of from $5\frac{1}{2}$ to $6\frac{1}{2}$ fathoms (10^m 1 to 11^m 9), weed, about 5 a quarter of a mile north-north-eastward of Pointe de Santa Maria.

Charts 1131, 1780, 158, 2158a, 449.

CHAPTER VIII

NORTH-WESTERN COAST OF ITALY—GOLFO DI GENOVA

CLIMATE AND WEATHER.—See page 29.

Chart 1780.

GENERAL REMARKS.—Golfo di Genova extends between the Franco-Italian frontier at the mouth of Fiume San Luigi, *see* below, and Punta Corvo, the eastern entrance point of Golfo di La Spezia, about 107 miles eastward. Riviera di Ponente, the name given to the coast fronting the western part of the gulf between the frontier and the city of Genova, about 72 miles east-north-eastward, is one of the most famous regions in the world for beauty. Riviera di Levante, the coast between Genova and Golfo di La Spezia, about 45 miles east-south-eastward, has a wilder and more imposing aspect than Riviera di Ponente.

The depths in the gulf are considerable.

Chart 3220.

15 COAST.—Fiume San Luigi to Punta della Roccia.—Dangers.

—**Anchorage.**—From the mouth of Fiume San Luigi, the coast, which consists of low cliffs broken by small sandy beaches, trends about $11\frac{1}{2}$ cables east-south-eastward to Capo Mortola (*Lat.* $43^{\circ} 47' N.$, *Long.* $7^{\circ} 34' E.$). This cape may be identified by Villa Hambury, a reddish building surmounted by a square tower and surrounded by thick vegetation. Close northward of the villa is the village of Mortola Inferiore, enclosed by olive trees, and about one cable farther northward, on a hill about 338 feet (103^m6) high, is a tower.

A rocky spit, the inner part of which is above water and the outer part of which has a 3-foot (0^m9) patch on it, extends about 2 cables southward of the cape. There is a fresh-water spring about $1\frac{1}{2}$ cables south-south-westward of the cape in a depth of about 8 fathoms (14^m6); an apparent “boiling” or “bubbling” of the surface of the sea may be seen over this position in calm weather.

30 Between Capo Mortola and Punta della Roccia, about $1\frac{1}{2}$ miles east-north-eastward, the coast is high and well cultivated. The ruins of Castel d'Appio are situated on the crest of a hill about $1\frac{1}{2}$ miles north-eastward of Capo Mortola; they are prominent from near the coast and, when seen from southward, appear as two separate buildings.

35 During south-westerly winds there is moderate shelter eastward of Capo Mortola. Vessels should anchor in depths of $5\frac{1}{2}$ fathoms (10^m1),

Charts 2609, 1780, 160, 2158a, 449.

Chart 3220.

sand and good holding ground, with Villa Hambury bearing 270° and Castel d'Appio 031°; small vessels anchor closer inshore, in depths of about 3½ fathoms (6^m4).

Ventimiglia.—Anchorage.—The town of Ventimiglia consists of the old part, built on a hill between Punta della Roccia and the mouth of Torrente Roia, about half a mile eastward, and the modern part, which stands on flat and low land eastward of the river. Two bridges cross Torrente Roia about 3 and 4 cables, respectively, within its mouth; the latter is a stone bridge with five arches. An old fort situated on the hill above Punta della Roccia, and, higher up the hill and at the western end of the old town, a barracks with two isolated yellow buildings with red roofs, may be distinguished.

Numerous stone groynes extend from the beach abreast the town; landing on this beach may be effected in calm weather. Scoglio Tondo, a low and dark rock, shaped like a priest's biretta, lies close inshore eastward of Punta della Roccia and is visible from some distance seaward. Considerable deposit is brought down by Torrente Roia when in flood, and caution is necessary when approaching the beach as the depths close inshore are liable to change.

In 1947, the population of Ventimiglia was 14,545. There is a hospital of moderate size in the town.

During easterly and north-easterly winds, there is good anchorage about half a mile southward of the mouth of Torrente Roia, in depths of from 9 to 10 fathoms (16^m5 to 18^m3), good holding ground, but this anchorage is untenable should a southerly wind set in. Along the stretch of coast between Capo Mortola and San Remo (page 214), the advent of winds from seaward is generally indicated by clouds along the mountains, a dark horizon and a swell.

Currents.—Along this part of the coast the currents generally set eastward or westward and are greatly influenced by the wind; they attain their greatest rate during the Libeccio (south-westerly wind).

Coast.—From the mouth of Torrente Roia (*Lat.* 43° 47' N., *Long.* 7° 37' E.), the coast trends east-south-eastward for about 3 miles to Capo Sant' Ampeglio and consists of a sandy beach within which the land is low, flat and shows an almost continuous line of buildings. A bank on which the depths are less than 3 fathoms (5^m5) fronts this stretch and extends as much as 1½ cables offshore, but off Capo Sant' Ampeglio, its width is reduced to about half a cable. Torrente Nervia enters the sea about one mile east-south-eastward of the mouth of Torrente Roia.

Bordighera.—Anchorage.—The town of Bordighera, like Ventimiglia, is in two parts. Borgata Nuova, the modern part, extends along the beach westward of Capo Sant' Ampeglio, and the old part lies grouped around a belfry on rising ground northward of the cape. In the town, the casino, a large yellow building on an embankment close within the cape, and a small grey church with a belfry and a red roof, situated close westward of the casino, are both prominent. From eastward or westward, Capo Sant' Ampeglio appears as a low point rising gradually to a summit covered with vegetation.

The town of Bordighera is a popular health resort; in 1947, its population was 5,978.

There is anchorage off Borgata Nuova, south-westward of Capo Sant' Ampeglio, in depths of about 6 fathoms (11^m0), about 2½ cables

Chart 3220.

offshore. Small vessels can anchor in depths of about 16 feet (4^m9), about three-quarters of a cable offshore. These anchorages are untenable with southerly winds and sea.

- 5 Shelter from north-westerly and westerly winds may be obtained north-north-eastward of the cape, in depths of 5½ fathoms (10^m1), about one cable offshore, with the belfry in the old town bearing about 280°.

Chart 3219.

- 10 **Capo Sant' Ampeglio to San Remo.—Anchorage.**—A sandy beach extends between Capo Sant' Ampeglio and Punta di Migliarese, about three-quarters of a mile north-eastward, whence the coast becomes rocky and steep as far as Punta Madonna della Ruota, about half a mile farther north-eastward; the latter point may be identified
15 by a reddish belfry which rises above a group of trees about one cable westward of the point.

- Between Punta Madonna della Ruota and Capo Nero, a yellowish, rounded point, bounded by a sea-wall, about 1½ miles eastward, the coast forms a bight on the north-eastern shore of which is the village
20 of Ospedaletti; the casino, a large yellowish building with three cupolas, is prominent in the village. A house with a square tower stands on Capo Nero and from it a road zigzags up a hill to Coldirodi, a village situated about one mile north-north-westward of the cape at an elevation of 830 feet (230^m0). A belfry, surmounted by a whitish
25 cupola, may be seen in the southern part of Coldirodi.

From Cap Nero, the coast trends north-eastward for about 2 miles to San Remo and is fringed by a rocky bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as 2 cables offshore.

- Anchorage, sheltered from westerly and south-westerly winds, may
30 be obtained about 3½ cables north-eastward of Punta Madonna della Ruota, in depths of about 9 fathoms (16^m5), sand; this anchorage is much used by coasters, and is preferable to the anchorage off Ospedaletti (*Lat.* 43° 48' N., *Long.* 7° 43' E.).

- There is anchorage off Ospedaletti, in depths of about 4 fathoms
35 (7^m3), about 1½ cables offshore, with a belfry in Ospedaletti village bearing about 023°.

Charts 157, plan of San Remo, 3219.

- Porto di San Remo.—Quayage.—Lights.**—The old part of the town of San Remo is situated on the steep slopes of a hill on the summit
40 of which stands Madonna della Costa, a cathedral surmounted by a white cupola and flanked by two towers. The new part extends along the coast and contains numerous palm-lined avenues with large hotels and villas, interspersed with public gardens and backed by hills covered in pine and oak woods. Prominent landmarks are
45 the cathedral; Ospizio Marsaglia, a large dark-grey building about 3 cables eastward of the cathedral; and a white radio mast, 230 feet (70^m1) high, situated on the coast about one mile eastward of the cathedral.

- The harbour is protected from southward by a mole which extends
50 about 3 cables eastward from an old triangular fort situated on the coast near the south-western end of the town. Near the middle of the mole is a quayed projection, about 330 feet (100^m6) long, and there is a quay of about the same length on the northern side of the harbour, about one cable northward of the inner part of the mole.

Charts 2609, 157, 1780, 160, 2158a, 449.

Charts 157, plan of San Remo, 3219.

A light is exhibited, at an elevation of 28 feet (8^m5), from a white conical tower, 25 feet (7^m6) in height, situated on the head of the mole.

A light is exhibited, at an elevation of 30 feet (9^m1), from a white circular tower, 25 feet (7^m6) in height, situated at the eastern end of the northern quay, about 2 cables west-north-westward of the head of the mole.

Torrente San Francesco, which enters the sea about half a cable northward of the extremity of the northern quay, brings down considerable quantities of sand and gravel. This deposit is prevented from causing silting in the harbour by an embankment of stones which projects 213 feet (64^m9) eastward from the southern side of the river entrance.

Buoys.—Depths.—Danger.—There are three mooring buoys in the harbour, one about one cable northward of the mole head, another about midway between the western end of the quayed projection of the mole and the eastern end of the northern quay, and a third about a quarter of a cable south-westward of the western end of the northern quay.

In 1950, there were general depths in the harbour of from 20 to 24 feet (6^m1 to 7^m3); from 15 to 17 feet (4^m6 to 5^m2) alongside the quayed projection of the mole; and from 12 to 18 feet (3^m7 to 5^m5) alongside the northern quay. Small craft and yachts usually anchor in the inner part of the harbour and secure their sterns to the inner part of the mole westward of the quayed projection, where the depths alongside decrease from 15 feet (4^m6) to 4 feet (1^m2) at the root of the mole.

Easterly winds, when strong, raise a sea in the harbour, but a vessel can ride out any weather in the harbour when moored open hawse east-north-eastward, with the stern secured to a buoy.

Foul ground, with depths of less than 6 feet (1^m8), extends about 210 feet (64^m0) north-north-eastward of the mole head (*Lat.* 43° 49' N., *Long.* 7° 47' E.), and it should be given a berth of about half a cable when entering the harbour.

Anchorage.—There is anchorage, in depths of about 6½ fathoms (11^m9), sand and good holding ground, eastward of the entrance to Porto di San Remo, about 2½ cables from the mole head, but the anchorage is not recommended during easterly winds.

When Monte Bignone (chart 2609), about 3 miles northward of the town, is enveloped in cloud, a change of weather may be expected.

Town.—Port facilities.—San Remo is a well-known winter tourist resort. The Harbour-master's office is situated on the northern quay. In 1947, the population of San Remo was about 30,000.

There is a hospital on the hill close southward of Madonna della Costa; it is connected with the town by funicular railway.

Small quantities of coal and liquid fuel are normally stocked.

Fresh water is laid on to the quays; in 1949, all hydrants on the quays were out of action owing to war damage, except one on the northern quay.

Fresh provisions are plentiful.

Minor repairs to small craft can be undertaken. There are three slipways, all suitable only for small craft.

Charts 3219, 157, 1780, 160, 2158a, 449.

Chart 3912.

- San Remo to Fiumara di Taggia.—Light.—Danger.—Anchor-
age.**—From San Remo, the low rocky coast trends about $2\frac{1}{4}$ miles
eastward to Capo dell'Arma, a rounded cape rising to a hill 377 feet
5 (114^m9) high, and cultivated in terraces; the small white chapel of
Nostra Signora della Guardia stands on this summit, surrounded by
trees, *see* view facing page 223. Monte Calvo, 709 feet (215^m1) high,
stands about one mile north-westward of the cape and the village of
Poggio lies about 3 cables farther northward.
- 10 A rocky bank fringes Capo dell'Arma, extending about $1\frac{1}{4}$ cables
offshore.

- A light is exhibited, at an elevation of 165 feet (50^m3), from a white
circular stone tower, 62 feet (18^m9) in height, attached to a dwelling
painted in black and white stripes, situated about one cable within
15 the extremity of Capo dell'Arma.

- From Capo dell'Arma, the coast trends about $1\frac{1}{2}$ miles north-
eastward to the mouth of Fiumara di Taggia (*Lat.* $43^{\circ} 50' N.$, *Long.*
 $7^{\circ} 52' E.$). Bussana Nuova, a village about half a mile north-eastward
of the cape, may be identified by a white convent with a grey roof
20 and a square belfry surmounted by a black cupola on which is a statue.
Close eastward of the convent and also prominent, is a yellowish sana-
torium with a large verandah. On a hill, 672 feet (204^m8) high, about
one mile north-north-westward of Bassana Nuova and easily distin-
guished from seaward, is the village of Bussana Vecchia.

- 25 Torre dell'Arma, an ancient, grey, square and squat tower, stands
on the coast about one mile north-eastward of Capo dell'Arma; the
village of Arma di Taggia lies stretched along the coast between the
tower and the mouth of Fiumara di Taggia, and a grey church, with
a belfry surmounted by a large white cross and flanked by two square
30 towers with cupolas, may be seen in the western part of the village.
At the head of the valley of Fiumara di Taggia and about $1\frac{3}{4}$ miles
northward of its mouth, is the large village of Taggia.

- A shoal spit, with depths of 13 feet (4^m0) over it, extends about
 $3\frac{1}{2}$ cables southward of Torre dell'Arma.

- 35 There is anchorage in depths of 7 fathoms (12^m8), sand and good
holding ground, with Torre dell'Arma bearing about 300° , distant
about $2\frac{3}{4}$ cables. A breakwater jetty extends 223 feet (68^m0) eastward
from the coast close to Torre dell'Arma.

- Current.**—Off this part of the coast, the normal current is south-
40 west-going; the strength of this current is noticeably increased when
Fiumara di Taggia is in flood. Should the usual south-west-going
current change to a south-easterly direction, a change of weather
is probable.

- Fiumara di Taggia to Punta Chiappe.—Dangers.—Anchorage.**
45 —From the mouth of Fiumara di Taggia, the coast trends about 2 miles
eastward to Punta Santo Stefano; the village of Riva Ligure is
situated on the coast about midway along this stretch and the village
of Santo Stefano al Mare lies close westward of Punta Santo Stefano.
A grey square tower stands on the beach at the western end of Riva
50 Ligure. On the crest of the hills backing the coast, the small villages
of Pompeiana, with a circular belfry, and Terzorio, which are situated
about $1\frac{1}{2}$ miles north-north-westward, and one mile northward, respect-
ively, of Punta Santo Stefano, form whitish patches among the olive
trees.

Chart 3912.

A rocky shoal with a depth of 3 feet (0^m9) over it extends about half a cable southward of the mouth of Rio Santa Caterina, close eastward of the village of Riva Ligure. Punta Santo Stefano is fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends about half a mile south-eastward of the cape. Two detached 26-foot (7^m9) patches lie about 6 cables south-eastward, and 5½ cables east-south-eastward, respectively, of the cape.

There is anchorage off the coast between Riva Ligure and Santo Stefano al Mare, in depths of 6½ fathoms (11^m9), sand, about 3½ cables offshore.

Between Punta Santo Stefano and Capo San Lorenzo (*Lat.* 43° 51' N., *Long.* 7° 58' E.), a low sandy point about 2½ miles east-north-eastward, and thence to Punta Chiappe, about 2½ miles farther east-north-eastward, the coast is fringed with rocks which, in places, extend about one cable offshore.

Torre Alegai, a grey square tower, 30 feet (9^m1) in height, and Torre Marmi, a similar tower, 60 feet (18^m3) in height, with a tiled roof, stand on small rocky points on the coast about 6 cables, and 1½ miles, respectively, east-north-eastward of Punta Santo Stefano. A group of yellow buildings with red roofs, and a sanatorium with a flat roof and fronted by a long verandah, are prominent on the stretch between Torre Marmi and Capo San Lorenzo. Within this latter stretch, the villages of Cipressa and Costarainera may be seen on the crest of the hills, about half a mile north-westward and northward, respectively, of Torre Marmi. The belfry of Sant' Antonio stands a little higher than, and about a quarter of a mile westward of, Costarainera, and about a similar distance eastward of that village is the reddish-coloured and ruined Torre del Poggio, with a round concrete water tank close westward, and a similar tank about 1½ cables south-eastward, of the tower.

The village of San Lorenzo consists of two groups of houses situated on the point of that name; the church, with a belfry, stands in an isolated position in front of the north-eastern group of houses.

Torre Prino or di Prarola, a dark and conical tower, in ruins, 69 feet (21^m0) in height, stands on the coast about 1½ miles east-north-eastward of Capo San Lorenzo; the village of Poggi, in which are two belfries, stands on a hill, 489 feet (149^m0) high, about half a mile north-westward of the tower.

The village of Borgo Prino, in which is an isolated building with a grey chimney, is situated about 6 cables east-north-eastward of Torre Prino and about a similar distance westward of Punta Chiappe.

Chart 1402.

IMPERIA.—**General remarks.**—Imperia, a municipality created by the union of Imperia Ponente, formerly called Porto Maurizio, with Imperia Levante, formerly called Oneglia, is one of the principal centres of Italian production and commerce. Imperia Ponente is built on a rounded hill close northward of Punta Chiappe, and Imperia Levante lies on a plain immediately eastward of the mouth of Torrente Impero, and about 1½ miles east-north-eastward of Punta Chiappe; the country surrounding both towns is covered with olive trees. The combined port contains two basins: Bacino di Ponente, formerly Porto di Porto Maurizio, situated east-north-eastward of the town

Charts 157, 1780, 160, 2158a, 449.

Chart 1402.

of Imperia Ponente, and Bacino di Levante, formerly Porto di Oneglia, situated about one mile east-north-eastward of Bacino di Ponente. Between these two basins, the coast trends about 9 cables east-north-eastward and is bounded by a sea-wall for about $4\frac{1}{2}$ cables north-eastward of Bacino di Ponente, whence it is low and sandy.

The following landmarks are prominent from seaward :—In Imperia Ponente :—the cathedral, a large, light-coloured building with a central cupola, flanked by towers also with cupolas, situated on the summit of a hill about 2 cables northward of Punta Chiappe ; Istituti Scolastici, a three-storeyed, brick building with a small square tower in the middle of the roof, situated at the north-eastern end of the town, about a quarter of a mile northward of the cathedral ; and, from south-westward, the monastery of Santa Chiara, a building with a long row of arches, situated near the coast, about half a cable north-westward of Punta Chiappe (*Lat. 43° 52' N., Long. 8° 01' E.*).

Between Bacino di Ponente and Bacino di Levante :—The Post office building, light-coloured and standing by itself about midway between Bacino di Ponente and the mouth of Torrente Impero.

In Imperia Levante :—The cathedral, a grey building with a square belfry and cupola, situated in the centre of the town ; a group of high chimneys at the western end of the town near the mouth of Torrente Impero ; and Castel Vecchio (chart 3219), a small group of houses with a belfry, situated on rising ground about one mile north-north-westward of the cathedral.

Pilotage.—Pilotage is compulsory for merchant vessels of over 500 tons gross both for entering and for leaving harbour. Vessels entering should await the pilot outside the harbour, under way. Vessels entering have priority over vessels leaving.

Bacino di Ponente.—Lights.—Depths.—Bacino di Ponente is protected by two moles, the northern of which is curved and extends about $1\frac{1}{2}$ cables in a south-south-easterly direction ; the southern mole extends about three-quarters of a cable east-north-eastward and $3\frac{1}{2}$ cables east-south-eastward. Molo Baburro, a short mole, 82 feet (25^m0) long, extends north-north-eastward into the basin from the elbow of the southern mole. The entrance between the moles is about half a cable wide and faces east-south-eastward. South-easterly winds, if strong, send in much sea and swell.

A light is exhibited, at an elevation of 37 feet (11^m3), from a white tower, 33 feet (10^m1) in height, situated about three-quarters of a cable within the head of the southern mole.

A light is exhibited, at an elevation of 28 feet (8^m5), from a red iron post, 15 feet (4^m6) in height, situated close within the head of the southern mole.

A light is exhibited, at an elevation of 28 feet (8^m5), from a white tower, 23 feet (7^m0) in height, situated close within the head of the northern mole.

A light is exhibited, at an elevation of 18 feet (5^m5), from a concrete post, situated on the head of Molo Baburro.

There are depths of from 4 to $4\frac{1}{2}$ fathoms (7^m3 to 8^m2) in the entrance, and of from $3\frac{1}{4}$ to $4\frac{1}{2}$ fathoms (6^m4 to 8^m2) within the basin, except in the south-western part where the depths are less than 3 fathoms (5^m5).

The northern and western sides of the basin are quayed ; the

Charts 3912, 157, 1780, 160, 2158a, 449.

Chart 1402.

northern quay has depths alongside of from $2\frac{1}{2}$ to $3\frac{1}{2}$ fathoms (4^m6 to 6^m9); vessels generally anchor and secure their sterns to this quay. The depths alongside the western quay are very shoal and access to this quay is confined to small craft. 5

There are two mooring buoys in Bacino di Ponente.

Bacino di Levante.—Lights.—Depths.—Bacino di Levante is protected by two moles, the western of which is slightly curved and extends about one cable in a south-south-easterly direction. The eastern mole extends about $1\frac{1}{2}$ cables south-south-westward and 10 2 cables west-south-westward. The entrance between the two moles faces west-south-northward and is about half a cable wide. Unless very strong, south-westerly winds do not send much sea into the harbour as the southern mole at Imperia Ponente affords some protection, but attention to moorings is made necessary by a heavy 15 swell.

A light is exhibited, at an elevation of 31 feet (9^m4), from a white conical tower, 23 feet (7^m0) in height, situated on the head of the eastern mole (*Lat.* $43^\circ 53' N.$, *Long.* $8^\circ 03' E.$).

A light is exhibited, at an elevation of 28 feet (8^m5), from a white 20 conical tower, 23 feet (7^m0) in height, situated on the head of the western mole.

There are depths of from 4 to 5 fathoms (7^m3 to 9^m1) in the entrance and of from 24 to 28 feet (7^m3 to 8^m5) within the basin.

The northern side of the basin, and the inner parts of the eastern 25 and western moles, are quayed. There are depths of from 12 to 22 feet (3^m7 to 6^m7) alongside the northern quay, and of from 6 to 14 feet (1^m8 to 4^m3) alongside the inner part of the western mole and this part of the harbour is normally reserved for commercial vessels. Yachts and small craft berth alongside the inner part of the eastern mole, but 30 this quay should be approached with caution as shoal patches extend as much as 50 feet (15^m2) from its face.

There are three mooring buoys in Bacino di Levante.

Current.—Fresh easterly winds cause a circular current in Bacino di Levante which sets through the entrance and along the eastern 35 mole in a north-easterly direction and thence southward along the western mole.

Directions.—Access to Bacino di Ponente is not difficult. Vessels from south-westward should steer to pass not less than three-quarters of a cable from the light-structure on the head of the southern mole 40 and should alter course for the entrance as soon as it is well open. The northern mole and Molo Baburro should not be approached within a distance of about 66 feet (20^m1).

Vessels entering Bacino di Levante should keep slightly towards the south-eastern side of the entrance as the depths south-westward 45 of the western mole are liable to decrease on account of deposit brought down by Torrente Impero.

Anchorage.—Prohibited anchorage.—There is open anchorage in depths of from $6\frac{1}{2}$ to 7 fathoms (11^m9 to 12^m8), sand and good holding ground, on the line joining the head of the southern mole at 50 Imperia Ponente with the head of the eastern mole at Imperia Levante, at a distance of about $2\frac{1}{4}$ cables from the former, or, with the heads of the western and eastern moles at Imperia Levante in line bearing 013° , at a distance of $2\frac{3}{4}$ cables from the latter. Vessels should be

Chart 1402.

ready to leave these anchorages immediately on the approach of southerly winds.

Anchorage is prohibited in the rectangular areas extending 40 metres (about 131 feet) on either side of the perpendiculars dropped to the opposite moles from the head of the northern mole at Imperia Ponente, and the head of the western mole at Imperia Levante, respectively.

Imperia.—Port facilities.—In 1947, the population of Imperia was 20,916. The Captain of the Port's office is situated at the western end of the northern quay in Bacino di Ponente and his deputy has an office at the middle of the northern quay in Bacino di Levante (Lat. 43° 53' N., Long. 8° 03' E.).

There is a medium-sized hospital which receives seamen, situated in Imperia Ponente.

Minor repairs can normally be undertaken in Bacino di Levante and there are normally mobile 3-ton cranes on the quays in this basin; in 1947, all mechanical appliances were out of action owing to war damage.

The following supplies are normally available:—

Bacino di Ponente.—Coal and liquid fuel in small quantities. Fresh provisions in small quantities. Fresh water is available at the northern quay.

Bacino di Levante.—Coal in moderate quantities. Liquid fuel in small quantities. Fresh provisions in moderate quantities. Fresh water is available at all quays.

Chart 3912.

COAST.—Imperia to Capo delle Mele.—Anchorage.—From the root of the eastern mole at Imperia Levante, the coast trends about 1½ miles east-north-eastward to Capo Berta, a rounded point of which the inner part is bare; a roughly constructed breakwater extends about 1½ cables eastward from the eastern side of the cape. Torre Arpissella, a slender cylindrical tower painted white, stands on the summit of a hill, 876 feet (267m) high, about 6½ cables west-south-westward of the root of the breakwater.

When Capo Berta is enveloped in cloud, south-easterly winds may be expected.

From Capo Berta, the coast curves in a wide bight to Capo Cervo, a steep and rocky point about 2½ miles north-eastward. The village of Diano Marina lies stretched along the coast on either side of the mouth of Torrente di San Pietro, which enters the sea about 8 cables northward of Capo Berta breakwater. A white church with a tall belfry stands near the beach at the centre of the village, and fronting it is a short, wide and roughly constructed jetty; another similar jetty projects from the beach fronting Hotel Paradis, the most prominent building in the village, situated about one cable north-eastward of the white church, but landing at these jetties is only practicable in calm weather. In 1947, the population of Diano Marina was 2,764.

Several small villages, each grouped around a church, are situated on the crest of the wooded hills above Diano Marina. Diano Castello, situated at an elevation of 443 feet (135m), about 1½ miles north-westward of Diano Marina, is the largest and most prominent of them, and may be identified by its white church and by a large convent,

Charts 157, 1780, 160, 2158a, 449.

Chart 3912.

situated close southward of, and a little below, the village. See view facing page 222.

The village of Rovere, situated on a small hill about one mile north-eastward of Diano Marina and about 2 cables inland, has a church with a white belfry. Torre di Santa Maria, white and circular, stands on the beach about a quarter of a mile eastward of Rovere. Poiolo, a small group of buildings, among which is a prominent chimney, may be seen on a wooded hill about 4 cables northward of Torre di Santa Maria (*Lat.* 43° 55' N., *Long.* 8° 06' E.).

The village of Cervo, which had a population of 660 in 1947, lies on the coast about 1½ miles north-eastward of Diano Marina. It is built around its church on a coastal hill and the beach in front of the village is crossed by a stone railway bridge with six arches. A natural breakwater extends about a quarter of a cable offshore from abreast the western end of the bridge, and landing can be effected on either side of the breakwater, according to weather conditions; caution is necessary in approaching it as a rocky spit, with depths of from 6 to 10 feet (1^m8 to 3^m0) over it, extends about a quarter of a cable south-eastward of the breakwater.

The ruins of an ancient conical tower stand close to the sea on Capo Cervo; they are not easy to distinguish but a little above them is an isolated yellow house with a red roof.

There is anchorage off Diano Marina, in depths of about 8 fathoms (14^m6), sand, with Diano Marina belfry bearing 309° and Cervo belfry bearing 039°. Small vessels anchor off the north-eastern jetty in depths of about 3 fathoms (5^m5), about 2 cables offshore.

There is anchorage off Rovere, in depths of about 7 fathoms (12^m8), sand, with the centre of Poiolo bearing 347° and Cervo belfry bearing 035°.

Charts 3911 and 3912.

From Capo Cervo, the coast trends north-eastward for about 2½ miles to Capo delle Mele. The village of Rollo, in which there is a belfry, stands on a hill amongst olive trees about one mile northward of Capo Cervo and is prominent from seaward.

Torrente Merula enters the sea through a wide valley about 6 cables eastward of Rollo; a reddish stone bridge with three low arches crosses the river close within its mouth. The village of Marina d'Andora, in which there are some prominent red buildings, extends along the coast eastward of the mouth of Torrente Merula.

There is anchorage off Marina d'Andora in depths of about 7 fathoms (12^m8) with the centre of the village bearing about 315° and Capo delle Mele signal station (*see below*) bearing 039°.

Capo delle Mele is steep and rounded. Madonna delle Penne, an old sanctuary, stands about half-way up the slope on the northern side of the cape, *see views facing pages 222 and 223.*

Light.—Signal station.—A light is exhibited, at an elevation of 308 feet (93^m9), from a white octagonal tower with two balconies, 82 feet (25^m8) in height, attached to a three-storeyed building, painted red with heavy white cornices, situated on Capo delle Mele.

A signal station, consisting of a small, light-coloured building with a flagstaff, is situated on the summit of Capo delle Mele at an elevation of 751 feet (228^m9). Storm signals are shown from this station, *see page 11.*

Charts 157, 1780, 160, 2158a, 449.

Charts 3911 and 3912.

Danger.—A bank on which the depths are less than 5 fathoms (9^m1) fronts Capo delle Mele and extends as much as 3 cables offshore southward of the cape.

- 5 **Currents.**—The currents off Capo delle Mele are strong and usually set south-westward. It is reported locally that they are strongest at from one to 2 miles offshore, while at about 2 cables offshore there is slack water or even at times a counter-current. These currents however are not dangerous, and tend to set a vessel away from the
10 coast.

Chart 3911.

Coast.—Capo delle Mele to Capo Santa Croce.—Lights.—

- Anchorage.**—From Capo delle Mele (*Lat.* 43° 57' N., *Long.* 8° 10' E.), the coast trends about 4 miles north-westward, northward and north-
15 north-eastward to Capo Santa Croce, forming a wide bight. For about one mile north-westward of the former cape, the shores of the bight are high and rocky, and thence a sandy beach extends to Capo Santa Croce; some detached rocks lie about one cable offshore at the northern end of the rocky stretch. Capo Santa Croce is a steep pro-
20 montory, terminating in a rocky point of a yellowish colour, surmounted by a small grey chapel; a white house stands close westward of the chapel and is the more prominent landmark.

- The village of Laigueglia, which in 1947 had a population of 1,220, stands on the coast about 1½ miles north-north-westward of Capo
25 delle Mele. A church with twin belfries and a white façade, only the upper part of which is visible from seaward, stands at the centre of the village and at the northern end is a tower. There is a short and roughly constructed jetty close northward of the church; landing can be effected at the south-western side of the jetty in calm weather.
30 A light is exhibited, at an elevation of 20 feet (6^m1), from a white concrete column, 15 feet (4^m6) in height, situated on the head of the jetty at Laigueglia.

- Small vessels with local knowledge can obtain anchorage in depths of about 4 fathoms (7^m3), about 1½ cables offshore, north-eastward
35 of the village of Laigueglia.

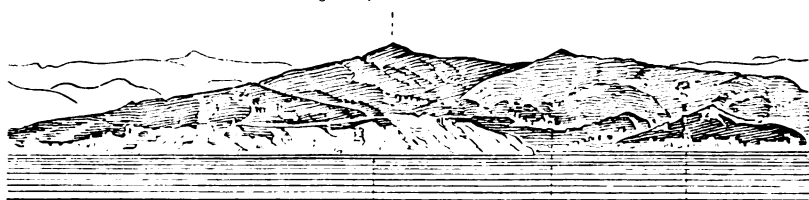
- The town of Alassio, a popular health resort which, in 1947, had a population of 5,609, lies stretched along the beach about 1½ miles north-north-eastward of Laigueglia. The sanctuary of Madonna della Guardia, a large square building, stands at an elevation of
40 1,923 feet (586^m1) on the crest of a ridge about 1½ miles north-westward of the town and is a good landmark. There are three churches in the town; the belfries of the northern and central churches are prominent.

- A concrete pier on piles projects 518 feet (157^m9) from the beach
45 abreast the central church. There are depths of about 10 feet (3^m0) at the head of the pier, and it is used by small craft in fine weather. Two lights are exhibited, one from each corner of the head of the pier at Alassio.

- Vessels with local knowledge may obtain anchorage off Alassio, in
50 depths of about 15 fathoms (27^m4), with Madonna della Guardia in line with the central church in the town, bearing about 311°, and Capo Santa Croce in line with a clump of trees on Capo Lena (*see* below). Small vessels may anchor closer inshore on the first-mentioned leading line, about 1½ cables offshore, in depths of about 4 fathoms (7^m3).

Charts 3912, 157, 1780, 160, 2158a, 449.

*Pizzo d'Evigno,
bearing 333°, distant 10 miles.*



Capo Berta.

*Diano
Castello.*

Diano Marina.

Diano Marina and coast to south-westward.

(Original dated 1921.)

Monte Chiappa.

*Signal station.
Lighthouse.*



Cervo.

*Marina di
Andora.*

*Capo delle
Mele,
bearing 018°, distant 8 miles.*

Isolotto Gallinara.

Capo delle Mele from southward.

(Original dated 1921.)

Signal station.



*Capo delle Mele,
bearing 222°, distant 9 miles.*

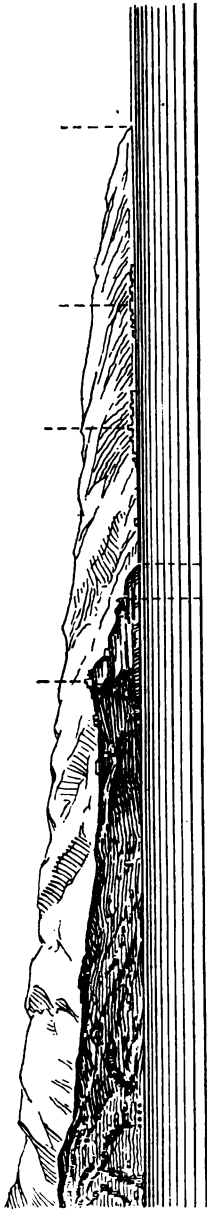
*Isolotto
Gallinara.*

Alassio.

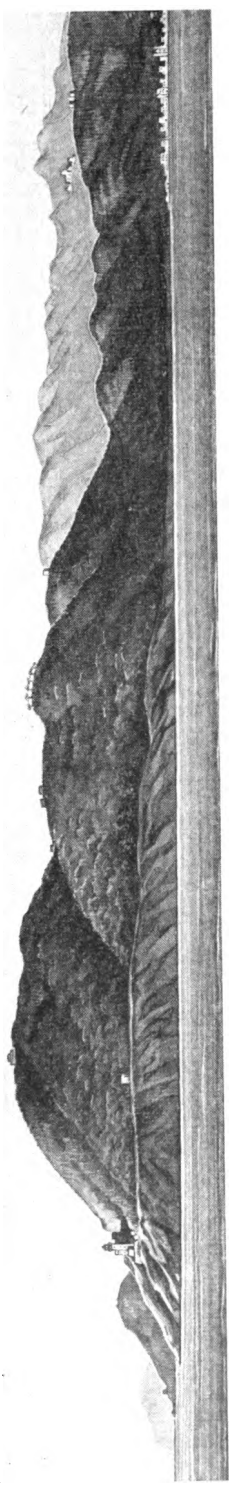
Capo delle Mele from north-eastward.

(Original dated 1921.)

N.S. della Guardia. Riva Ligure. S. Stefano al Mare. Capo S. Lorenzo.



L.Ho. Capo dell'Arma, bearing 051°, distant about 3 miles.
Capo dell'Arma from south-westward.
(Original dated prior to 1947.)



C. Berla. C. Cervo. Capo delle Mele lighthouse, bearing 250°, distant about 2 miles.
(Original dated 1877.)

Alassio.



C. di Noli. Noli. Isolotto di Bergeggi.

Capo di Vado. Porto di Vado. Rada di Vado from eastward.
(Original dated 1877.)

Forto S. Lorenzo, Vado Ligure, bearing 258°, distant about 1½ miles.

Chart 3911.

**Capo Santa Croce to Capo Lena.—Off-lying island.—Anchor-
age.**—Between Capo Santo Croce and Capo Lena, about $2\frac{1}{2}$ miles
north-eastward, the coast consists of a succession of rocky points
separated by beaches. Capo Santa Croce is the termination of a spur
from Monte Bignone, a peak which attains an elevation of 1,706 feet
(520^m0) about one mile north-north-westward of the cape. On the
coast north-eastward of Capo Santa Croce, which here consists of the
lower slopes of Monte Bignone, is a prominent stone embankment
which supports the coastal road. 5 10

Capo Lena (*Lat.* $44^{\circ} 02' N.$, *Long.* $8^{\circ} 14' E.$) lies at the south-eastern
end of a wide tract of low flat land. The cape itself is rounded and
sandy and is formed by deposit brought down by Fiume Centa which
enters the sea at the cape. Depths of less than 5 fathoms (9^m1)
extend as much as half a mile offshore southward of the cape and it
should be given a wide berth, especially after heavy rain and strong
winds which alter the banks off the river entrance. 15

Isolotto Gallinara, situated about one mile southward of Capo
Lena, is rocky and is covered with vegetation. On its summit, at an
elevation of 295 feet (89^m9), is a house, surmounted by a round tower
and surrounded by a wall. On the southern side of the island, a high,
narrow and curved ridge of rock forms a small cove with precipitous
sides which is open eastward and has depths of from 7 to 8 fathoms
(12^m8 to 14^m6). There is a landing place on the north-western side of
the island from which a footpath leads to the summit. 20 25

There is anchorage in depths of about 8 fathoms (14^m6), sand, about
2 cables north-westward of the north-western side of Isolotto Gallinara,
with the tower on its summit bearing about 135° .

Coast.—Aspect.—Between Capo Lena and Capo di Noli, about
 $12\frac{1}{2}$ miles north-eastward, the coast forms a wide bight encircled by
a chain of mountains which culminate in Monte Carmo, 4,560 feet
(1,389^m9) high, situated about $4\frac{1}{2}$ miles inland and midway between
these capes. Several streams flow into the sea along this stretch of
coast and there are numerous villages and towns, both on the coast
and on the hills which back it, *see* view facing page 230. 30 35

Capo Lena to Capo di Caprazoppa.—Anchorage.—For about
3 miles northward of Capo Lena the coast is low, flat and sandy and
is backed by a wide plain. About half a mile inland from Capo Lena
and near the southern end of this plain is the old town of Albenga,
which had a population of 5,848 in 1947. It contains several high
towers, mostly square and of a reddish hue, and standing on high
ground close westward of the town is a prominent reddish building
resembling a castle. Forte Centa, a small square disused fort, stands
among houses near the coast, about one cable inland. Three stone
groynes project from the beach eastward of Albenga. 40 45

Small vessels with local knowledge can obtain anchorage off the
beach abreast Albenga, in depths of about $3\frac{1}{2}$ fathoms (6^m4), with the
bathing establishment, a yellow, one-storeyed building with a balcony,
bearing about 270° .

Should the southern sky become obscured by heavy cumulus clouds
with grey strata, strong southerly winds may be expected. 50

The village of Ceriale, which had a population of 1,339 in 1947, lies
stretched along the coast about 3 miles northward of Capo Lena.
A church with a white belfry and a black cupola, situated in the centre

Chart 3911.

of the village; a light-yellow building close south-westward of the village; and a tall brick chimney about half a mile south-south-westward of the light-yellow building, are all good landmarks.

- 5 Small vessels with local knowledge may obtain anchorage in depths of about 6 fathoms (11^m0), about 2½ cables offshore, near the mouth of Torrente Torsero, with the above-mentioned tall chimney bearing about 270°.

- Borghetto San Spirito (*Lat. 44° 07' N., Long. 8° 14' E.*), a village 10 with a population of 791 in 1947, lies about one mile north-north-eastward of Ceriale from which it is separated by Monte Piccaro, a coastal hill 922 feet (281^m0) high. A white belfry at the north-eastern end of the village and a tall chimney a little farther north-eastward are both prominent. Castello Borelli, situated on the eastern slopes 15 of Monte Piccaro, is prominent, both on account of its position and by a tall and slender reddish square tower which surmounts it.

- Loano, a town with a population of 2,539 in 1947, is situated on the coast about 1½ miles north-eastward of Borghetto San Spirito, and between them, Torrente Varatello enters the sea about a quarter of 20 a mile north-eastward of the latter village. Loano may be identified by a large dark cupola on which is a gilded statue, which surmounts the cathedral. About a quarter of a mile northward of the town is the monastery of Monte Carmelo, which also has a cupola, smaller and lighter in colour than that on the cathedral. Two groynes project 25 from the beach abreast the town.

There is anchorage about half a mile south-eastward of Loano, in depths of about 10 fathoms (18^m3), with Monte Carmelo monastery bearing 340°.

- Pietra Ligure, with a population of 2,881 in 1947, is situated on the 30 coast about 1½ miles north-eastward of Loano; Torrente Maremola enters the sea close north-eastward of the town. A church with twin belfries stands in the north-eastern part of the town and there is another church of a reddish colour with a small belfry, farther south-westward. The buildings of a shipyard, containing two tall cranes, 35 are prominent; a concrete pier, about a quarter of a cable long, extends from the shipyard and four mooring buoys are moored between 3 and 4 cables offshore abreast the yard.

- The small village of Borgio stands on a hill at the entrance to a narrow valley about one mile east-north-eastward of Pietra Ligure; 40 a church with twin belfries dominates this village.

- Capo di Caprazoppa, situated about 1½ miles eastward of Borgio, is a rocky point which rises vertically from the sea to an elevation of 269 feet (82^m0), with a square tower, partly demolished, on its summit. Monte Caprazoppa, 955 feet (291^m1) high, about half a mile west-north- 45 westward of the extremity of the cape, has some large, yellowish patches on its southern slopes, a large, yellowish stone quarry on its south-eastern side, and a large sandy patch lower down on the same side as the quarry; this hill is prominent from seaward.

Charts 3910 and 3911.

- 50 **Capo di Caprazoppa to Capo di Noli.—Anchorage.—Danger.**—The municipality of Finale Ligure, which includes the towns of Finalborgo, Finalmarina and Finalpia, presents an unbroken line of buildings on the coast, between Capo di Caprazoppa and Punta San Donato—about 1½ miles east-north-eastward; in 1947, the population of Finale

Charts 3910 and 3911.

Ligure was 10,487. Finalmarina lies about half a mile north-eastward of Capo di Caprazoppa, between the mouths of Torrente Porra and Torrente Sciusa and at the entrance to a valley in which Finalborgo is situated about three-quarters of a mile inland. About $1\frac{1}{4}$ miles north-north-westward of Finalborgo and filling the head of the valley, is Rocca di Perti, 1,306 feet (397^m1) high, a massive mountain, rugged and dark, with a curved ridge which stands out plainly among the surrounding heights. Castel Gavone, a ruined castle with a tower on its western side, stands at an elevation of 564 feet (171^m9), about half a mile north-westward of Finalborgo. Forte di Finalborgo (*Lat.* 44° 11' N., *Long.* 8° 19' E.), a large, square and bastioned building, stands at the north-western end of Finalborgo.

In Finalmarina, the grey cupola of a large church in the centre of the town may be distinguished, and northward of the town, an isolated and reddish-coloured villa surmounted by a square tower may also be seen amid trees. A bridge which crosses Torrente Porra close within its mouth is prominent.

Finalpia extends along the coast between the mouth of Torrente Sciusa, which is crossed by a yellow stone bridge with three arches, and Punta San Donato; the latter point is steep and rocky and is surmounted by an ancient tower of the same name.

Vessels with local knowledge may obtain anchorage off Finalpia, in depths of about 12 fathoms (21^m9), sand, with Castel Gavone bearing 296° and Torre di Punta San Donato bearing about 038°.

From Punta San Donato, the coast trends about $1\frac{1}{4}$ miles east-north-eastward to Punta Crena, another steep and rocky point also surmounted by an ancient tower, square and well-preserved. The village of Varigotti lies stretched along a sandy beach close westward of Punta Crena and the white isolated church of San Lorenzo stands on the coast about half a mile westward of the village.

Banco Stelle, a shoal with a least depth of $5\frac{1}{2}$ fathoms (10^m1) over it, lies about $5\frac{1}{2}$ cables eastward of Torre di Punta San Donato and about $3\frac{1}{2}$ cables offshore.

From Punta Crena, the coast trends about $1\frac{1}{4}$ miles north-eastward to Capo di Noli.

Capo di Noli.—Signal station.—Capo di Noli is the extremity of a rocky promontory, high, steep and yellowish-grey where it is not covered in vegetation; it is steep-to, depths of 20 fathoms (36^m6) being found at a distance of about one cable from the point. The ruins of a chapel are situated near the eastern extremity of the promontory at an elevation of 558 feet (170^m1), and a little higher up the slope is a slender, battlemented tower. See view facing page 245.

A signal station, consisting of a white building with a black roof with a flagstaff in front of it, is situated at an elevation of 928 feet (282^m8) on the summit of Monte Capo di Noli, about 3 cables south-westward of the eastern extremity of the cape. Storm signals are exhibited from the signal station, see page 11.

Chart 3910.

Capo di Noli to Punta del Maiolo.—Anchorage.—From Capo di Noli, the coast sweeps in a wide curve to Punta del Maiolo, a wooded point about $2\frac{1}{2}$ miles north-north-eastward, which may be identified by Torre di Ere, an ancient square tower standing at an elevation of 417 feet (127^m1) on the summit of a hill about $1\frac{1}{4}$ cables northward of

Charts 157, 1780, 160, 2158a, 449.

Chart 3910.

the point. Torrente Cercallo enters the sea about $1\frac{1}{2}$ miles northward of Capo di Noli.

The ancient walled town of Noli, which in 1947 had a population of 5 1,645, is situated on the coast about half a mile north-westward of Capo di Noli; it has three square reddish towers, the westernmost of which has a clock on the seaward side. An old round tower, named La Rocca, is situated on the summit of an isolated, pointed hill close northward of the town. See view facing page 245.

10 The town of Spotorno (*Lat. 44° 14' N., Long. 8° 25' E.*), which had a population of 1,540 in 1947, lies on the coast about $1\frac{1}{2}$ miles northward of Noli. A yellow belfry may be distinguished rising above the houses in the town and there is an old square fort on a hill close north-westward of the belfry. A sandy beach extends between Spotorno 15 and Punta del Maiolo, and at its north-eastern end is a large white hotel which is prominent from southward.

Good shelter from westerly winds may be obtained in Il Grugno, a bight between Capo di Noli and the town of Noli; the head of the bight is steep-to, depths of more than 10 fathoms (18^m3) being found 20 at a distance of one cable offshore.

There is anchorage south-eastward of Spotorno in a depth of 10 fathoms (18^m3), about $2\frac{1}{2}$ cables offshore, with Spotorno fort and belfry in line, bearing about 325°. Small vessels with local knowledge may anchor, in depths of about 3 fathoms (5^m5), one cable offshore on 25 the same alignment.

Off-lying islet.—Isolotto di Bergeggi, situated about $1\frac{1}{2}$ cables south-eastward of Punta del Maiolo, is 207 feet (63^m1) high and uninhabited; there is a ruined fort on its summit. The islet is difficult to distinguish against the coast when seen from southward or south- 30 eastward. There are depths of over 5 fathoms (9^m1) in the channel between the islet and Punta del Maiolo.

Punta del Maiolo to Capo di Vado.—**Light.**—From Punta del Maiolo, the coast trends north-north-eastward for about $1\frac{1}{2}$ miles to Capo di Vado. Punta Prodani, close off which are two above-water 35 rocks, lies about a quarter of a mile, and Punta di Bergeggi, about one mile, north-north-eastward of Punta del Maiolo. The village of Bergeggi lies scattered on the green slopes of Monte Santa Elena, 1,138 feet (346^m9) high, about midway between Punta Prodani and Punta di Bergeggi; a church with a yellow belfry and a grey cupola 40 is prominent in this village.

Chart 157, plan of Vado.

Capo di Vado has some large stone quarries on its eastern part, which give the cape a whitish appearance. On its summit, at an elevation of 528 feet (160^m9), are the ruins of Forte di San Stefano, 45 see views facing page 230.

A light is exhibited, at an elevation of 142 feet (43^m3), from a white octagonal tower, 114 feet (34^m7) in height, attached to a dwelling painted in red and white horizontal bands, situated on Capo di Vado.

50 *Charts 157, plan of Vado, and 3910.*

RADA DI VADO.—**General remarks.**—**Light.**—Between Capo di Vado and the village of Fornaci, about $2\frac{1}{2}$ miles north-north-eastward, the coast recedes to form Rada di Vado, a bight which affords

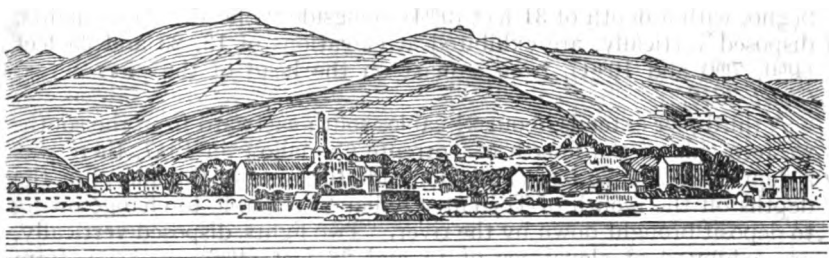
Charts 157, 1780, 160, 2158a, 449.

Charts 157, plan of Vado, and 3910.

anchorage with good holding ground, sheltered from westward. Winds from south-eastward are seldom strong and raise only a moderate sea, but during winter offshore squalls descend from the mountains and are very strong.

5

From an offing, the head of Rada di Vado presents a chain of mountains covered with vegetation and sloping towards the sea, but without any distinctive features except for the buildings on the shore and the monastery of Madonna del Monte, an isolated white building, situated at an elevation of 531 feet (161^m8) on the summit of a hill about 10 2¼ miles north-north-westward of Capo di Vado and about 6¼ cables north-north-westward of the village of Zinola (*Lat. 44° 17' N., Long. 8° 27' E.*). On a closer approach, the town of Vado Ligure, situated on flat ground at the mouth of Torrente Segno, about one mile north-westward of Capo di Vado, will be identified. The slender belfry of 15 the Cathedral is prominent in the centre of the town, and Fortino di San Lorenzo, low and dark, situated on the beach about one cable southward of the town, is also prominent. Forte di Vado, situated on a slope facing the sea about half a mile south-eastward of Fortino di San Lorenzo and about 2 cables north-westward of Capo di Vado, 20 will be readily identified. The village of Porto Vado lies on the coast about midway between Capo di Vado and the town of Vado Ligure.



Fortino di San Lorenzo.

(Original dated 1908.)

The village of Zinola is situated on the north-western side of the mouth of Torrente Quiliano, about three-quarters of a mile north-north-eastward of the mouth of Torrente Segno, and the village of Lègino 25 lies about a similar distance north-eastward of Zinola; a church with a conical cupola and a belfry painted in red and white horizontal bands is prominent in the former, and a church with a grey cupola and a yellow belfry is prominent in the latter, village.

Fornaci, a suburb of the city of Savona, lies stretched along the 30 coast between Lègino and the mouth of Torrente Letimbro, about one mile east-north-eastward, and may be identified by its large, high buildings. A large building with a tall red-brick chimney stands on the western side of the mouth of Torrente Letimbro, and a short mole projects from the western side of the river mouth. Two bridges cross 35 the river close within its mouth.

A light is exhibited, at an elevation of 56 feet (17^m1), from an iron framework structure on a grey hut, situated on the seaward bastion of Fortino di San Lorenzo.

Charts 157, 1780, 160, 2158a, 449.

Chart 157, plan of Vado.

Breakwater.—Quay.—A breakwater extends about one cable north-eastward from the eastern extremity of Capo di Vado; it shelters from southerly winds a quay which extends about 2 cables
 5 north-westward along the coast from near the root of the breakwater. There is a least depth of 11 feet (3^m4) alongside the quay and small vessels can remain berthed alongside it except in strong easterly winds.

Piers.—Depths.—Lights.—Four piers, all of which are fitted for the supply or discharge of liquid fuel and are connected by pipe-line
 10 with oil tanks, extend from the shore at the head of Rada di Vado. Tankers are berthed end-on to the heads of these piers, with their bows anchored or secured to mooring buoys; in winter, strong north-easterly winds frequently prevent vessels berthing at these piers. The inner part of the southernmost pier is fitted for the discharge of
 15 coal from small vessels or lighters.

The southernmost pier extends about 1½ cables eastward from a position about one cable southward of Fortino di San Lorenzo, with depths of about 30 feet (9^m1) alongside its head. In 1947, the coal elevators on the inner part of this pier were out of action due to war
 20 damage. Two lights, disposed vertically, are exhibited at elevations of 18 and 31 feet (5^m5 and 9^m4), from a mast at the head of the pier.

A second pier extends about 1½ cables east-north-eastward from a position about half a cable south-eastward of the mouth of Torrente Segno, with a depth of 31 feet (9^m4) alongside its head. Three lights,
 25 disposed vertically, are exhibited at elevations of 13, 23 and 33 feet (4^m0, 7^m0 and 10^m1), from a mast on the head of the pier.

Chart 3910.

A third pier extends about 2½ cables south-eastward from the south-western side of the mouth of Torrente Quiliano; in 1947, there was
 30 a depth of about 26 feet (7^m4) alongside the head of this pier, but the depths off the mouth of Torrente Quiliano are liable to change owing to deposit brought down by the river. Two lights, disposed vertically, are exhibited at elevations of 15 and 28 feet (4^m6 and 8^m5), from a mast at the head of the pier.

A fourth pier (*Lat.* 44° 18' N., *Long.* 8° 27' E.) extends about 2½
 35 cables south-eastward from a position about one mile north-eastward of the mouth of Torrente Quiliano, with a depth of 31 feet (9^m4) alongside its head. Strong south-westerly winds at times make berthing at the head of this pier impracticable. A light is exhibited, at an
 40 elevation of 28 feet (8^m5), from a red framework structure on a hut painted in black and white horizontal bands, 16 feet (4^m9) in height, situated at the head of the pier.

Charts 157, plan of Vado, and 3910.

Anchorage.—There is good anchorage, in depths of about
 45 11 fathoms (20^m1), sand and weed and good holding ground, with the cathedral belfry at Vado Ligure bearing 289° and just open southward of Fortino di San Lorenzo, and the western extremities of the ruins of Forte di San Stefano and Forte di Vado in line, bearing about 181°. Small vessels may anchor, in depths of about 4 fathoms
 50 (7^m3), about three-quarters of a cable offshore abreast the village of Porto Vado.

Regulations.—See regulations for Savona on page 230.

Currents.—In Rada di Vado, the current is weak and usually sets north-westward, with a counter-current inshore. If, as sometimes

Charts 157, 1780, 160, 2158a, 449.

Charts 157, plan of Vado, and 3910.

happens, the current sets in the opposite direction, south-easterly winds may be expected, and in these conditions the current in the vicinity of the piers becomes sufficiently strong to affect vessels berthing at the pier-heads.

Vado Ligure.—Port facilities.—In 1947, the population of Vado Ligure was 4,979. There is a landing place for boats at the north-western end of the quay situated close north-westward of the root of the breakwater, and another at a short iron pier abreast the village of Porto Vado, about 4 cables west-north-westward of the quay. During spring and summer, night fishing with lamps takes place within about half a mile of the shore of Rada di Vado.

Fuel oil and fresh water may be obtained at any of the four piers described above. Moderate supplies of fresh provisions can be obtained at Vado Ligure.

Chart 157, plan of Porto di Savona.

PORTO DI SAVONA.—General remarks.—Light.—The city of Savona lies on an extensive plain between the mouth of Torrente Letimbro and Punta Sant' Erasmo, about three-quarters of a mile north-eastward. The harbour is divided into four parts called Avam-
porto, Porto Vecchio, Darsena Vecchia and Darsena Nuova, the whole
being protected from south-eastward by a series of moles extending
about 6 cables north-north-eastward from Punta Sant' Erasmo and
terminating in Molo Frangiflutti. Molo delle Casse projects about
1½ cables eastward from about midway along the series of moles; in
1949, the outer part of this mole had collapsed and was partially sub-
merged. Molo Sottoflutto extends about 1½ cables south-eastward
from Punta Garbasso to a position about 1½ cables north-westward
of the head of Molo Frangiflutti. Molo Miramare extends about half
a cable south-south-eastward from the north-western side of the
harbour about 2½ cables south-westward of Molo Sottoflutto. The
north-western side of the harbour is fronted by a rocky bank, which,
with depths of less than 3 fathoms (5^m5) over it, extends as much as
half a cable offshore. The harbour is available to vessels of a draught
not exceeding 29 feet (8^m8), but there is a 22-foot (6^m7) patch about
three-quarters of a cable south-eastward of the head of Molo Miramare.

A light, known as Faro di Savona, is exhibited at an elevation of 82 feet (25^m0), from a grey iron framework tower, with a white lantern and a masonry base, 66 feet (20^m1) in height, situated about half a cable within the collapsed head of Molo delle Casse (*Lat. 44° 19' N., 40 Long. 8° 30' E.*).

Pilotage.—Pilotage is compulsory for all vessels. The pilot station is situated in Torre Leon Pancaldo, a prominent square building at the head of the harbour, close northward of the western side of the entrance to Darsena Vecchia. Vessels requiring a pilot should stop
about half a mile outside the harbour entrance and sound a succession
of short blasts and one final long blast on their whistle or syren. Pilots board vessels from a small tug which is then available to assist in berthing the vessel if required.

Harbour.—Lights.—The harbour is entered between the heads of
Molo Frangiflutti and Molo Sottoflutto. A light is exhibited, at an
elevation of 46 feet (14^m0), from a grey iron framework structure,
33 feet (10^m1) in height, situated on the head of Molo Frangiflutti.

Charts 3910, 157, 1780, 160, 2158a, 449.

Chart 157, plan of Porto di Savona.

A light is exhibited, at an elevation of 39 feet (11^m9), from a green framework structure on a hut, 33 feet (10^m1) in height, situated on the head of Molo Sottoflutto. The foundations of this mole extend
5 some distance outward under water, and the head should be given a berth of at least 100 feet (30^m5).

Two lights, disposed vertically, are exhibited at an elevation of about 33 feet (10^m1), from an iron framework structure on a green hut, 23 feet (7^m0) in height, situated on the head of Molo Miramare.

- 10 **Quayage.—Depths.**—The inner side of Molo Frangiflutti is faced by a quay about 960 feet (292^m6) long, which is reserved for vessels carrying explosives; in 1949, there was a least depth of 23 feet (7^m0) alongside this quay.

- Calata Paolo Boselli, a quay extending about 1,800 feet (548^m6)
15 south-westward and southward from the inner end of Molo Frangiflutti, forms the south-eastern side of the harbour to the entrance to Darsena Nuova; in 1949, there were depths alongside of from 20 to 28 feet (6^m1 to 8^m5), except at the north-eastern end where there is an 18-foot (5^m5) patch.

- 20 The southern end of Calata Paolo Boselli forms the eastern entrance point of Darsena Nuova, a basin lined with quays; in 1949, there were general depths in the basin of from 27 to 31 feet (8^m2 to 9^m4) with one 21-foot (6^m4) patch, and depths alongside the quays of from 20 to 31 feet (6^m1 to 9^m4).

- 25 On the north-eastern side of Molo Miramare is a shallow basin protected from north-eastward by a small L-shaped mole; this basin is reserved for yachts and small pleasure craft.

- Close south-westward of Molo Miramare is a detached concrete mole, about 420 feet (128^m0) long; it is fitted with electric elevators for
30 unloading coal and is connected with a coal depot ashore by means of overhead cables. In 1949, there were depths alongside this mole of from 26 to 30 feet (7^m9 to 9^m1).

- Porto Vecchio is entered between the above-mentioned detached mole and the western entrance point of Darsena Nuova; its south-
35 eastern side is faced with a quay 1,050 feet (320^m0) long. In 1949, there were depths alongside this quay of from 20 to 23 feet (6^m1 to 7^m0).

- Darsena Vecchia (*Lat. 44° 18' N., Long. 8° 29' E.*) lies at the head of Porto di Savona, and is entered through Porto Vecchio. In 1949, there were general depths of from 21 to 28 feet (6^m4 to 8^m5) in the
40 middle of the basin and from 10 to 19 feet (3^m0 to 5^m8) alongside the quays which face the sides.

- Regulations.**—Vessels moored in Porto di Savona are forbidden to discharge overboard any ashes, refuse or sewage. These regulations also apply to vessels anchored in Rada di Albissola (page 232), Rada
45 di Vado (page 228), or vessels navigating between these roadsteads within 5 miles of the coast.

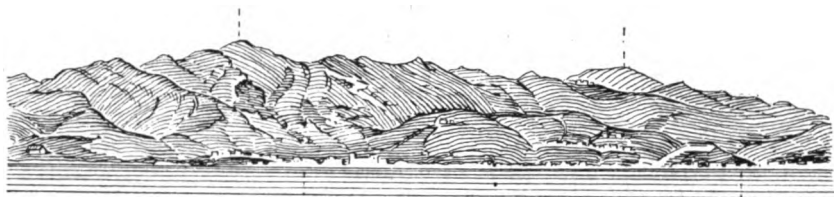
- Directions.**—Vessels approaching from eastward may identify Porto di Savona by Capo di Noli, about 7½ miles south-south-westward, by the light-structure on Capo di Vado, about 4 miles south-south-
50 westward, and by Monte Settepani, about 13 miles west-south-westward of the harbour entrance, *see* views facing this page.

By day, the belfry of San Giacomo, about 1½ cables westward of the head of Molo Miramare, is a useful mark on which to approach as the moles are low and are not easily distinguished.

Charts 3910, 157, 1780, 160, 2158a, 449.

Monte Carmo,
bearing 320°, distant 8·5 miles.

Monte Settepani.



Loano.

Pietra Ligure.

Pietra Ligure and coast to south-westward.

(Original dated 1921.)



*Capo di
Noli.*

*Isolotto di
Bergeggi.*

Capo di Vado lighthouse.

Molo delle Casse.

Capo di Vado from close eastward of Porto di Savona.

(Original dated 1921.)



Isolotto Bergeggi.

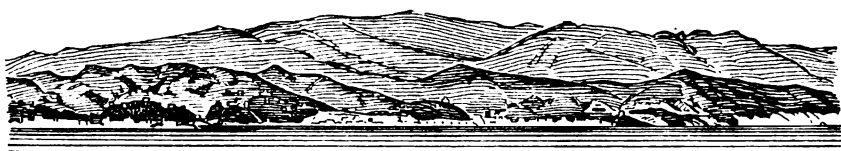
Bergeggi.

*Capo di Vado lighthouse,
bearing 290°, distant
5 miles.*

Vado.

Capo di Vado from eastward.

(Original dated 1921.)



Celle.

Varazze.

*Guardia di Varazze,
bearing 011°, distant 8·5 miles.*

Varazze from southward.

(Original dated 1921.)



*M. della
Guardia.*

*Villa
Pallavicini, bearing 048°,
distant 7 miles.*

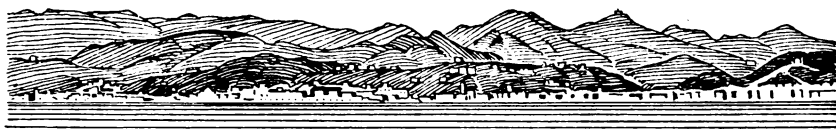
N.S. del Gazo.

Fort Ratti.

*Lanterna
lighthouse.*

Coast westward of Genova from south-westward.

(Original dated 1921.)



N.S. del Gazo.

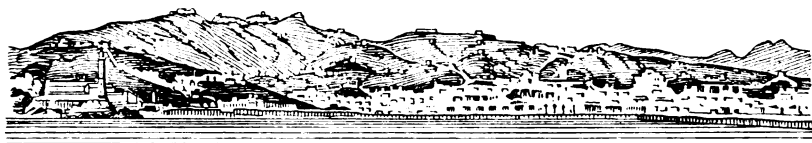
Sampierdarena.

*M. della
Guardia.*

Belvedere.

Coast westward of Genova from southward.

(Original dated 1921.)



*Lanterna lighthouse,
bearing 015°,
distant 1·3 miles.*

*Forte
Bigato.*

*Forte
Sperone.*

Castellaccio.

Genova (Lanterna) light-tower from southward.

(Original dated 1921.)

Chart 157, plan of Porto di Savona.

At night, vessels approaching from southward should keep the railway station at Albissola Marina, *see* below, which will nearly always be seen illuminated, bearing less than 026° and well open eastward of Molo delle Casse light; this light must be given a wide berth on account of the collapsed mole which extends about half a cable eastward of it. 5
The light on Molo Frangiflutti is obscured over Molo delle Casse and a bank with depths of less than 5 fathoms (9^m1) which fringes it.

Vessels approaching from eastward should keep Lanterna light at Genova (page 237) bearing 073° astern. 10

City.—Port facilities.—Savona is an active industrial city. The old part of the town lies close south-westward of the head of the harbour and the new part extends up the slopes of a hill on the north-western side of the port. In 1947, the population was 57,354. The chief industries are the manufacture of glass, textiles and metal goods and 15 the principal imports are coal and coke, oil, iron ore and cellulose.

There is a large hospital which receives seamen.

Large stocks of coal are maintained; coal can be embarked either direct from the quays or from lighters.

Vessels requiring fuel oil should proceed to Vado, *see* page 228. 20

Fresh water is laid on to all quays. Fresh provisions are plentiful.

All the quays are served by the railway and have numerous 5-ton elevators and 3-ton cranes on them.

There are several tugs of medium size and there are numerous lighters of from 20-100 tons capacity. 25

Large repairs to hull, boilers or machinery can be undertaken; there is a small slipway in Darsena Vecchia suitable for tugs, lighters and small craft.

There is regular sea communication with other Mediterranean ports.

Deratisation.—Deratisation can be undertaken, *see* page 18. 30

Chart 3910.

COAST.—Punta Garbasso to Punta di Varazze.—From Punta Garbasso (*Lat.* $44^{\circ} 19' N.$, *Long.* $8^{\circ} 30' E.$), the coast trends about $2\frac{1}{4}$ miles east-north-eastward to Punta di Celle and is steep and rocky. The village of Albissola Marina is situated about 6 cables north-eastward of Punta Garbasso and the coast between them is fringed by Scogli Margonara, a chain of rocks extending about one cable offshore. Torrente Sansobbia flows into the sea close eastward of Albissola Marina, and on its eastern side is the village of Albissola Superiore, situated on a small plain about half a mile inland. A reddish-coloured 40 iron railway bridge, over the mouth of Torrente Sansobbia, is prominent, as also is Albissola railway station, close eastward of the river mouth. The village of Capo is situated close eastward of the mouth of Torrente Sansobbia and from seaward appears joined to Albissola Marina; in 1947, the combined population of the two villages was 2,968. There is 45 a light-yellow belfry in the centre of Albissola Marina and a church with a large grey cupola in Capo. The ruined Torre di Albissola stands on a steep and rocky cape of the same name about 6 cables eastward of the mouth of Torrente Sansobbia, but being overgrown with bushes can only be distinguished from a short distance. A short 50 breakwater, with a quay on its western side, projects from the coast close eastward of the mouth of Torrente Sansobbia.

Vessels with local knowledge may obtain good anchorage, sheltered

Charts 157, 1780, 160, 2158a, 449.

Chart 3910.

from northerly winds, in Rada di Albissola. For regulations, *see* page 230.

Punta di Celle, about one mile east-north-eastward of Torre di Albissola, terminates in a very steep rocky mass, surmounted by a pine grove. A round reddish tower stands on the summit of Collina Cà di Bregalla, a hill 859 feet (261^m8) high, situated about 1½ miles north-westward of the point.

The village of Celle Ligure lies stretched along a beach about 4 cables north-eastward of Punta di Celle. A stream runs through the centre of the village and is crossed close inside its mouth by a railway bridge with four arches. A belfry, painted in black and white stripes and surmounted by a grey cupola, stands in the south-western part of the village and farther inland is another belfry, painted yellow. A prominent hotel, painted bright green with a grey roof, stands at the north-eastern end of the village. In 1947, the population of Celle Ligure was 1,276.

Punta dell'Olmo, situated about one mile east-north-eastward of Celle Ligure, may be identified by numerous large buildings close within its extremity, some of which are dark red in colour. A white pyramidal beacon stands close above the point.

About a quarter of a mile north-eastward of Punta dell'Olmo is Punta di Varazze, a point covered with trees, above which a reddish battlemented tower rises. La Crocetta, a small church with a spire, situated on the summit of a hill, 965 feet (294^m1) high, about one mile north-north-westward of the latter point, stands out plainly and may be readily identified.

Varazze.—Anchorage.—The town of Varazze, which in 1947 had a population of about 12,000, extends along a sandy beach on either side of the mouth of Torrente Teiro, which enters the sea about 7 cables north-eastward of Punta di Varazze. Prominent landmarks in the vicinity are :—Monte Grosso (*Lat.* 44° 22' N., *Long.* 8° 36' E.), 1,319 feet (402^m0) high, situated about one mile north-eastward of the town and surmounted by the white chapel of Guardia di Varazze ; this mountain is covered with thick vegetation, and in clear weather, when seen from some distance southward, the chapel appears as a white spot in the dark growth ; a stone quarry on a hill northward of the town which, when seen from southward, appears as a large white triangular patch ; and Collina di Cantalupo, a hill about half a mile north-westward of the town with a white chapel surmounted by a white cross on its summit and a church with a reddish belfry about half-way up its slopes. In the town, Collegio Don Bosco, a yellow, four-storeyed building rising above the houses at the back of the town ; a large whitish building on the beach near the western end of the town ; and a large hotel with a sloping roof near the middle of the beach. *See* view facing page 231.

A pier, with a depth of 9 feet (2^m7) alongside its head, projects about 200 feet (61^m0) from the beach near the south-western end of the town.

Vessels with local knowledge may obtain anchorage off Varazze, in depths of about 6 fathoms (11^m0), with La Crocetta bearing 300° and the south-eastern end of a block of yellow buildings on the eastern entrance point of Torrente Teiro, bearing 030°. During May, June and July, night fishing with lamps takes place within about 2 miles of the coast in the vicinity of Varazze.

Charts 157, 1780, 160, 2158a, 449.

Chart 3910.

Varazze to Capo Arenzano.—Anchorage.—From the mouth of Torrente Teiro, the coast trends about 2 miles east-north-eastward to Punta Invrea, a point which may be identified by a large white villa, situated amongst trees on a steep rocky slope close northward of it. 5
Torre di Mola stands on the coast about half a mile eastward of the mouth of Torrente Teiro; the coastal rocks on this stretch are light-coloured but become darker farther eastward. The village of Cogoleto lies about $1\frac{1}{2}$ miles north-eastward of Punta Invrea and a group of low buildings with some chimneys is situated on the coast midway between 10
them.

Charts 3910 and 3909.

Cogoleto, a village with a population of 2,147 in 1947, may be identified by a quarry which makes a light-coloured patch on a hill behind it, and by a white church with a grey belfry and cupola, situated on the beach at the eastern end of the village. A hospital, surrounded by numerous outbuildings, some of which are dark red and others light-coloured, is situated on a plateau at an elevation of 525 feet (160^m), about one mile west-north-westward of the village. 15

Northward of Cogoleto is Catena dei Giovi, a mountain range of 20 which the principal peaks are Monte Beigua, 4,222 feet ($1,286^m$) high, situated about $4\frac{1}{2}$ miles north-westward, and Monte Rama, 3,766 feet ($1,147^m$) high, about $2\frac{1}{2}$ miles north-north-westward, respectively, of the village.

Torrente Leirone enters the sea about three-quarters of a mile eastward of Cogoleto and is crossed at its mouth by a stone bridge with three arches; the chimneys of a factory on its western bank are prominent. 25

A spit, with a depth of 13 feet (4^m) over its extremity, extends about 3 cables southward from the coast abreast the western end of 30
Cogoleto.

Vessels with local knowledge may obtain anchorage off the eastern part of Cogoleto, eastward of the spit, in depths of about 5 fathoms (9^m), about $2\frac{1}{2}$ cables offshore.

Chart 3909.

Capo Arenzano (*Lat. $44^\circ 24' N.$, Long. $8^\circ 41' E.$*), situated about one mile east-north-eastward of the mouth of Torrente Leirone, is fringed by rocks extending about one cable offshore. The cape rises steeply in a bare slope to a flat summit 262 feet (79^m) high, on which stands a tall grey square tower. 40

Charts 157, 3909 and 3910.

Measured distances.—There are two measured distances between Punta di Celle (page 232) and Capo Arenzano.

The longer measured distance, of 36,137 feet ($11,014^m$) on a 240° course, is between the following alignments:— 45

On the east:—A black and white beacon in line with a small white pillar, in a field at Campassi, about three-quarters of a mile westward of Capo Arenzano.

On the west:—A small white pillar surmounted by a black and white beacon, standing above the railway, in line with the lightning-conductor on the roof of the Villa Bandini in the village of Celle Ligure. 50

The shorter measured distance, of 17,150 feet ($5,227^m$) on a 240° course, is within the limits of the longer, and is between:—

On the east:—A small white pillar surmounted by a black and white

Charts 157, 1780, 160, 2158a, 449.

Charts 157, 3909 and 3910.

beacon in line with a white pillar, both situated on Colle Chiappa, about $1\frac{3}{4}$ miles west-north-westward of Capo Arenzano.

- On the west :—A black and white beacon, situated on the mole at
 5 Cantiere Baglietto, in line with a similarly coloured beacon on a small white pillar on the roof of a factory in Cantiere Baglietto, about one mile eastward of Varazze.

In 1947 these measured distances were out of use owing to the marks having been destroyed during the war.

10 *Chart 3909.*

- Capo Arenzano to Punta di Crevari.—Anchorage.**—From Capo Arenzano, the coast trends north-eastward for about $2\frac{3}{4}$ miles to Punta di Crevari and is fringed by a rocky bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as one cable offshore
 15 in places. Punta della Chiappa, about 2 miles north-eastward of Capo Arenzano, may be identified by a pink, three-storeyed building which stands on it, and from some directions by Scoglio Nave, a rock which lies close off it and is known locally as Scoglio della Chiappa. This rock is low and dark and is difficult to distinguish against the coast.
 20 The town of Arenzano, which, in 1947, had a population of 2,319, is situated on the coast about half a mile northward of Capo Arenzano. It contains a large and prominent church with twin belfries, one on each side of its eastern front, and on the slope of a hill behind the town is another church with a grey belfry. The Grand hotel, a yellowish
 25 building on the beach fronting the town, and a villa with a flat roof surmounted by a crenellated tower and situated close south-westward of the hotel, are also prominent.

- Vessels with local knowledge may obtain anchorage off Arenzano, in depths of about 7 fathoms (12^m8), sand and weed, with the large
 30 church in the town bearing 278° and Scoglio Nave bearing 059° and in line with the easternmost belfry in Voltri, *see* below. The holding ground is good and small vessels can obtain some shelter from westerly and south-westerly winds at the anchorage.

Chart 1461.

- 35 **WESTERN APPROACHES TO GENOVA. — General remarks.**—The municipality of Genova extends along the coast between the mouth of Torrente Cerusa (*Lat. 44° 26' N., Long. 8° 45' E.*), about a quarter of a mile north-eastward of Punta di Crevari, and the eastern end of Nervi, about 13 miles east-south-eastward. In addition to the
 40 city proper of Genova, known as Genova-Centro, the coastal towns of Voltri, Prà, Pegli, Sestri Ponente, Cornigliano and Sampierdarena, westward of Genova-Centro, and Sturla, Quarto dei Mille, Quinto al Mare and Nervi, on the eastern side of Genova-Centro, are all united under the name of Grande Genova. All these towns show an unbroken
 45 line of buildings along the coast at the foot of a range of mountains, and behind Genova-Centro, the buildings extend up the mountain slopes, continuing in some places as far as the summits.

- Genova-Voltri.—Lights.—Anchorage.**—The town of Genova-Voltri, situated on the eastern side of Torrente Cerusa and at the
 50 western end of the built-up area extending westward from Genova-Centro, had a population of 6,813 in 1947. It is divided into two parts by Torrente Leiro, about half a mile eastward of Torrente Cerusa. There are two belfries in the town, the western one, situated between

Charts 3909, 157, 1780, 160, 2158a, 449.

Chart 1461.

the two rivers, is white with a grey cupola, and the other, situated eastward of Torrente Leiro, is smaller and of a yellowish hue. On a hill, 522 feet (159^m1) high, behind the town and between the two rivers, is a church with a belfry painted white with a red top. 5

The two rivers bring down considerable quantities of deposit which form temporary banks off their mouths; these banks are dispersed along the coast during heavy weather, and the beach in consequence is extending farther seaward.

A pier, 308 feet (93^m9) long, with depths of from 13 to 16 feet (4^m0 to 4^m9) alongside its head, projects from the coast near the western end of the town. A mooring buoy is moored near the pier head.

Two lights, disposed vertically, are exhibited at elevations of 15 and 25 feet (4^m6 and 7^m6), from a metal framework structure, 11 feet (3^m4) in height, situated on the pier head. 15

Anchorage may be obtained anywhere off the town, where there are depths of about 5 fathoms (9^m1) about a quarter of a mile offshore. Owing to the formation of the mountains backing Voltri, northerly winds are very violent in this vicinity.

Genova-Prà.—Lights.—The town of Genova-Prà, which, in 1947, had a population of 8,727, lies about 1½ miles eastward of Voltri; it is separated from the village of Sappello close westward of it by Torrente Foce. A slender tower, painted red with a white top, stands on the beach in front of the town, and a group of five prominent chimneys will be seen at the eastern end of the town. 20

A pier, 590 feet (179^m8) long, with a depth of about 23 feet (7^m0) alongside its head, extends from the beach at the eastern end of the town. 25

A light is exhibited, at an elevation of 46 feet (14^m0), from an iron framework structure, 23 feet (7^m0) in height, situated on the beach near the middle of the town. 30

Two lights, disposed vertically, are exhibited at elevations of 21 and 28 feet (6^m4 and 8^m5) from a metal framework structure, 11 feet (3^m4) in height, situated on the head of the pier. There are two mooring buoys near the pier head. 35

Vessels may obtain temporary anchorage off Prà (*Lat.* 44° 26' N., *Long.* 8° 47' E.); the bottom is sand and good holding ground.

Dangers.—About one cable eastward of the root of Prà pier is a rocky point on which there is a dark, low fort named Castelluccio. A reddish-coloured villa, surmounted by a square tower stands about half a mile northward of Castelluccio. Scoglio Pria Pulla, a small dark rock, lies about 1½ cables southward of a point about half a mile eastward of the root of Prà pier. Owing to its small size, it is difficult to distinguish against the rocky coast and only shows up well in a calm sea. There are depths of 2½ fathoms (5^m0) between this rock and the coast. A rock with a depth of about 3 feet (0^m9) over it lies about half a cable southward of Scoglio Pria Pulla. 45

A tall and prominent chimney at Cornigliano (page 236) bearing less than 097° and well open southward of a small rocky peninsula about 2½ miles east-south-eastward of Prà pier, leads clear southward of these dangers. 50

Genova-Pegli.—The town of Genova-Pegli lies close eastward of the point fronted by Scoglio Pria Pulla; in 1947, it had a population of 16,294. A light-coloured belfry stands on a hill close northward of

Chart 1461.

the town, close to a house standing in a park and gardens named Villa Pallavicini. Torre Pallavicini, a red circular tower, stands at an elevation of 443 feet (135^m0) on the summit of the hill and about 5 2 cables northward of the belfry. Torrente Varennà flows into the sea close eastward of Pegli; its mouth is crossed by a stone bridge with five arches.

The village of Multedo lies close eastward of the mouth of Torrente Varennà; it is overlooked by Villa Pignone, situated on a hill and 10 prominent on account of its architecture and dark yellow colour.

Genova-Sestri Ponente.—This town, which had a population of 26,374 in 1947, lies close eastward of Multedo and extends about 1½ miles east-south-eastward along a straight beach and terminates in a small rocky peninsula. Bric del Gazo, a conical mountain, 1,381 feet 15 (420^m9) high, with a prominent sanctuary on its summit, is situated about one mile northward of the centre of the town, *see* view facing page 231.

A high iron pier projects 459 feet (139^m9) from the western part of the beach fronting the town, about one mile west-north-westward of 20 the small rocky peninsula; there are depths of from 20 to 23 feet (6^m1 to 7^m0) alongside the head, decreasing to about 13 feet (4^m0) at a distance of about 200 feet (61^m0) from its root. There are two mooring buoys near the head of the pier.

A detached mole, about 1½ cables from the coast, protects the front- 25 age of the Ansaldo dockyard, situated close eastward of the pier. In 1950, work was in progress extending this mole in an east-south-easterly direction.

Caution.—In 1950, work was in progress constructing an enclosed harbour fronting Sestri Ponente (*Lat.* 44° 26' N., *Long.* 8° 51' E.). 30 This harbour will be bounded on the west by a mole extending southward and south-eastward from the coast about 2 cables eastward of the mouth of Torrente Varennà; on the east, by a mole extending south-westward from the small rocky peninsula; and on the south by a detached mole running parallel with the coast and about three- 35 quarters of a mile from it.

Port facilities.—Fresh provisions are plentiful and fresh water is laid on to the pier. Shipbuilding is the main industry of the town. Large repairs can be undertaken and there is a slipway capable of taking vessels up to 300 tons.

40 There are three mobile cranes on the pier, the largest being of 6 tons capacity.

Genova-Cornigliano and Genova-Sampierdarena.—Genova-Cornigliano, situated about half a mile east-south-eastward of Sestri Ponente, is mainly industrial and contains numerous tall factory 45 chimneys in addition to the prominent one situated about 4½ cables eastward of the small rocky peninsula. The square Torre Spronati stands at an elevation of 587 feet (178^m9), about 8½ cables northward of this prominent chimney, and the belfry of Coronata, whitish in colour, is situated at an elevation of 443 feet (135^m0), about 2 cables 50 east-south-eastward of the tower.

Torrente Polcevera, which enters the sea about three-quarters of a mile eastward of the small rocky peninsula, separates Cornigliano from Sampierdarena; a long iron bridge crosses this river close within its mouth.

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In 1950, work was in progress reclaiming the area fronting Cornigliano between the small rocky peninsula and the mouth of Torrente Polcevera, up to a distance of about $2\frac{1}{2}$ cables offshore.

Genova-Sampierdarena, situated on the eastern side of Torrente Polcevera, also shows its industrial character by its numerous factory chimneys. The belfry of Belvedere, light-coloured with a green cupola, is situated at an elevation of 419 feet (127^m7), on a hill about half a mile northward of the centre of the town and is prominent from seaward. Southward of Sampierdarena, the coast is fronted by the westernmost basin of Porto di Genova.

Chart 1461, plan of Genoa.

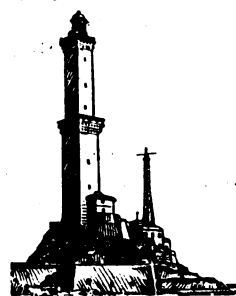
PORTO DI GENOVA.—Aspect.—Porto di Genova is the principal port of Italy. The harbour fronts Sampierdarena on the west and Genova-Centro on the east, and extends between the mouth of Torrente Polcevera and that of Torrente Bisagno, which enters the sea about 3 miles east-south-eastward. It can accommodate the largest vessels. *Charts 1461 and 3909.*

The following are good landmarks when approaching the harbour :—Bric del Gazo (page 236) ; Monte Figogna, 2,638 feet (804^m1) high, situated about 3 miles northward of Bric del Gazo and surmounted by a sanctuary which resembles a castle with two turrets ; Forte Diamante, which stands at an elevation of 2,188 feet (666^m9), about $3\frac{1}{2}$ miles east-south-eastward of Monte Figogna ; the two forts of I due Fratelli (*Lat. $44^{\circ}27' N.$, Long. $8^{\circ}55' E.$*), situated about 4 cables south-westward of Forte Diamante, the eastern at an elevation of 2,142 feet (652^m9) and the western at an elevation of 2,041 feet (622^m1) ; Forte Sperone, massive and with a light-coloured roof, situated at an elevation of 1,604 feet (488^m9), about one mile southward of the two Fratelli forts ; Forte Begato, with a red roof, which stands at an elevation of 1,549 feet (472^m1), about 4 cables west-south-westward of Forte Sperone ; Forte Castellaccio, with a massive tower of a reddish colour, about 6 cables southward of Forte Sperone ; the isolated, circular Torre Quezzi, situated about $1\frac{1}{2}$ miles eastward of Forte Castellaccio ; Forte Ratti, a long low building with a round tower at its north-western end, situated about $1\frac{1}{2}$ miles east-north-eastward of Torre Quezzi at an elevation of 1,850 feet (563^m9) ; Forte Richelieu, grey, square and surmounted by a cupola, situated about one mile east-south-eastward of Torre Quezzi at an elevation of 1,361 feet (414^m8) ; and the two masts of a radio station, situated about one mile west-south-westward of Forte Castellaccio. *See views facing pages 231 and 244.*

Chart 1461, plan of Genoa.

Lights. — Radiobeacon. — Radio D.F. station. — Signal station. — A light, known as Lanterna light, is exhibited at an elevation of 385 feet (117^m3), from a square tower on a yellow dwelling, 249 feet (75^m9) in height, situated on Capo del Faro, about $1\frac{1}{2}$ miles east-south-eastward of the mouth of Torrente Polcevera. A radiobeacon transmits from the light-structure.

A light is exhibited, at an elevation of 95 feet (29^m0), from a white conical tower, 34 feet

*Lanterna light-tower.*

Charts 157, 1780, 160, 2158a, 449.

Chart 1461, plan of Genoa.

(10^m4) in height, situated on Punta Vagno, about 2½ miles east-south-eastward of Lanterna light-structure. There is a radio D.F. station close northward of Punta Vagno light-structure.

- 5 A light for the use of aircraft is exhibited from each of two radio masts situated about 11 cables north-north-eastward of Lanterna light-structure.

A signal station, consisting of a yellow house surmounted by an iron framework mast, stands close southward of the base of Lanterna light-structure. The station is available both day and night and displays storm warning signals. See page 11.

Caution.—In 1948, there were numerous uncharted wrecks in the harbour and local knowledge is necessary for entering Porto di Genova.

- Pilotage.**—Pilotage is compulsory for all vessels over 200 tons gross for entering, leaving, or for movements inside Porto di Genova. Pilots board vessels at least one mile outside the harbour entrance. Vessels requiring a pilot should display flag G of the International Code of Signals, and at night should sound four long blasts on the whistle or syren.

- 20 **Outermost moles.**—**Lights.**—Porto di Genova is protected from southward by a detached mole which extends about 2½ miles east-south-eastward from a position about 6½ cables south-eastward of the prominent chimney at Cornigliano; the western part of this mole is called Diga Foranea and the eastern part, Molo Duca di Galliera. The western boundary of the port is formed by Molo Nino Ronco, which extends about 4 cables southward and east-south-eastward, from the eastern side of the mouth of Torrente Polcevera, and the eastern boundary is formed by Molo Umberto Cagni, which extends about 3 cables west-south-westward and south-south-westward from a position on the eastern side of the harbour about one mile west-north-westward of Punta Vagno light-structure. The heads of Molo Duca di Galliera and Molo Nino Ronco are both painted in black and white diagonal stripes and the head of Diga Foranea is painted in black and white horizontal bands.

- 35 Within the outer moles, the harbour consists of Avamporto, northward of which are Bacino delle Grazie and Bacino Porto Vecchio, and westward of which are Bacino della Lanterna and Bacino di Sampierdarena.

- A light is exhibited, at an elevation of 72 feet (21^m9), from a red iron framework tower, 49 feet (14^m9) in height, situated on the head of Molo di Galliera.

A light is exhibited, at an elevation of 20 feet (6^m1), from a stone hut, 8 feet (2^m4) in height, situated on the head of Molo Umberto Cagni.

- Entrances.**—**Buoyage.**—**Caution.**—There are two entrances to Porto di Genova; Bocca di Levante, the principal entrance, about 1½ cables wide between Molo Duca di Galliera (*Lat.* 44° 23' N., *Long.* 8° 56' E.) and the head of Molo Umberto Cagni, and Bocca di Ponente, about half a cable wide between Molo Nino Ronco and the head of Diga Foranea. Bocca di Ponente is closed and the entry and departure of vessels by this entrance is prohibited.

In 1951, the southern part of Bocca di Ponente was obstructed by wrecks and entrance was restricted to a channel, in which there was a least charted depth of 29 feet (8^m8), about half a cable wide between the area of wrecks and the head of Molo Umberto Cagni. The south-

Charts 3909, 157, 1780, 160, 2158a, 449.

Chart 1461, plan of Genoa.

western side of this channel is marked by a can buoy, painted black with a black conical topmark, moored about $1\frac{1}{2}$ cables south-south-eastward of the head of Molo Umberto Cagni, and a light-float, exhibiting a *red flashing* light, moored about $1\frac{1}{2}$ cables west-north-westward of the head of that mole. 5

Avamporto.—Light.—Avamporto is entered from Bocca di Levante and comprises the area between Molo Duca di Galliera, Molo Umberto Cagni and Molo Giano, the latter being a mole which extends about a quarter of a mile west-south-westward from the eastern side of the harbour to a position about $2\frac{1}{2}$ cables north-westward of the head of Molo Umberto Cagni. Porticciolo Duca degli Abruzzi, a small basin between the inner parts of Molo Umberto Cagni and Molo Giano, is reserved for yachts and small craft, and has depths of from 10 to 35 feet (3^m0 to 10^m7). 10 15

A light is exhibited, at an elevation of 16 feet (4^m9) from a circular stone tower, painted in black and white horizontal bands, 10 feet (3^m0) in height, situated on the head of Molo Giano.

Bacino delle Grazie.—Lights.—Bacino delle Grazie is the area lying between Avamporto and a line joining the eastern extremity of Ponte Pietro Paleocapa, situated about 4 cables north-westward of the head of Molo Giano, and the western extremity of Molo Vecchio, situated about $2\frac{1}{2}$ cables farther northward. On the eastern side of the basin are Molo Guardiano, Calata G. Boccardo and Calata Gadda; the former is reserved for vessels under repair and the two latter are commercial quays, fitted for working cargoes. On the western side of the basin is Calata degli Olii Minerali, which is reserved for tankers. As the depths alongside this quay are shallow, tankers berth on a floating catamaran at the quay, alongside which there are depths of from $8\frac{1}{2}$ to $10\frac{1}{2}$ fathoms (15^m5 to 19^m2). 20 25 30

A light is exhibited, at an elevation of 26 feet (7^m9), from a red-brick tower on a building situated at the north-eastern extremity of Ponte Pietro Paleocapa.

A light is exhibited, at an elevation of 26 feet (7^m9), from a grey circular stone tower, 18 feet (5^m5) in height, situated on the head of Molo Vecchio. 35

Porto Vecchio.—Porto Vecchio is entered from Bacino delle Grazie and extends westward and northward to the head of Porto di Genova. Numerous piers with quays between them project from the head of the harbour, which is roughly semi-circular in shape. Ponte Pietro Paleocapa (*Lat.* $44^\circ 24' N.$, *Long.* $8^\circ 55' E.$) and the three quays westward of it are reserved for vessels discharging lubricants and coal; the remaining piers and quays in this basin are used for working general cargoes and are all equipped with the necessary appliances. In 1945, there were depths of from 17 to 44 feet (5^m2 to 13^m4) in Porto Vecchio. 40 45

Bacino della Lanterna.—Lights.—Bacino della Lanterna lies westward of Avamporto. It is entered between the head of a spur extending about half a cable northward from the north-western end of Molo Duca di Galliera, and the southern extremity of Calata degli Olii Minerali, about half a cable northward, and it extends about 8 cables west-north-westward to Ponte Etiopia, being bounded southward by Diga Foranea. There are depths of 37 feet (11^m3) in the entrance and of over 33 feet (10^m1) in the fairway of this basin. The 50

Charts 1461, 3909, 157, 1780, 160, 2158a, 449.

Chart 1461, plan of Genoa.

piers and quays between the entrance and Ponte San Giorgio, about half a mile west-north-westward, are specially adapted for discharging coal.

- 5 A light is exhibited, at an elevation of 20 feet (6^m1), from a white circular stone tower with black stripes, 10 feet (3^m0) in height, situated on the spur at the western end of Molo Duca di Galliera which forms the southern entrance point of Bacino della Lanterna.

- 10 A light is exhibited, from a white circular stone tower with black stripes, situated at the south-eastern extremity of Calata degli Olii Minerali which forms the northern entrance point of Bacino della Lanterna.

- A detached mole, consisting of masonry blocks awash, extends about three-quarters of a cable west-north-westward parallel with Diga Foranea, from a position about half a cable south-westward of the south-western corner of the head of Ponte San Giorgio.

A light is exhibited from a beacon on the eastern end of this mole.

- Bacino di Sampierdarena.**—Bacino di Sampierdarena lies westward of Bacino della Lanterna and extends about 8½ cables west-north-westward between Ponte Etiopia and Molo Nino Ronco. There are to be five piers with connecting quays between them in this basin; in 1947, the three westernmost piers and the quays between them were under construction. There are depths of over 5½ fathoms (10^m1) in the fairway of the basin and there is normally a depth of over 6½ fathoms (11^m9) in Bocca di Ponente, the entrance between Molo Nino Ronco and Diga Foranea.

As previously stated, entry and departure by Bocca di Ponente is prohibited.

- Currents.**—Outside the port, the current generally sets westward and its rate increases with the Scirocco (south-easterly wind). It is felt a little in Avamporto and a westerly set with a rate of about one knot runs through Bacino della Lanterna and Bacino di Sampierdarena; this latter current is, however, decreased by contrary winds, and its direction may even be reversed.

- 35 **Directions.**—Vessels entering or leaving the port or under way inside the harbour must conform to the International Regulations for Prevention of Collisions at Sea, and must not exceed a speed of 6 knots.

- Vessels must enter and leave Porto di Genova by Bocca di Levante, except that vessels leaving Bacino della Lanterna and Bacino di 40 Sampierdarena by day may normally depart by Bocca di Ponente.

- Vessels from southward or south-westward should approach with the south-western corner of Forte Ratti in line with Punta Vagno light-structure, bearing 040°, until the light-structures of Lanterna and Molo Duca di Galliera are in line bearing 304°, when course may be altered 45 for Bocca di Levante, taking care to give the head of Molo Duca di Galliera (*Lat. 44° 23' N., Long. 8° 56' E.*) a berth of not less than 7 cables so as not to interfere with the movements of vessels leaving the port. Vessels from westward should keep at a distance of at least one mile from Molo Duca di Galliera until Punta Vagno light-structure 50 bears 040°. In order to avoid vessels entering, vessels leaving the port are cautioned to keep well over towards the head of Molo Duca di Galliera, but not within 66 feet (20^m1) of it, owing to the submerged foundation extending from it. See page 21 for regulations for the approaches to Italian ports.

Charts 1461, 3909, 157, 1780, 160, 2158a, 449.

Chart 1461, plan of Genoa.

Regulations during arrival and departure of Seaplanes.—The following regulations are in force when seaplanes are taking off or alighting in an area about 213 feet (64^m9) wide lying about midway between Diga Foranea and the heads of Ponte Eritrea, Ponte Etiopia 5 and Ponte San Giorgio.

When seaplanes are about to take off or alight on the water, a green flag will be displayed at the mast of Capo del Faro signal station, and a syren will be sounded at the aerodrome situated close northward of the root of Ponte San Giorgio to warn all vessels to keep clear of the 10 landing ground area. The green flag will be hauled down immediately on completion of the taking off or landing.

Whilst the green flag is displayed at Capo del Faro signal station, all vessels must keep clear of the area reserved for taking off or landing of seaplanes. 15

An area adjoining the aerodrome, between Ponte San Giorgio and Ponte Etiopia, is reserved for the berthing of seaplanes.

All vessels passing through the channel between Diga Foranea and the heads of Ponte San Giorgio and Ponte Eritrea should reduce speed as much as possible and should keep to the northern side of the channel 20 when proceeding westward, and to the southern side when proceeding eastward, so as not to interfere with the movements of seaplanes alighting or taking off.

During flying exercises, a green flag will be displayed at the mast at the aerodrome, and whilst so displayed the movements of vessels 25 remain free, provided that, as far as possible, they do not interfere with the movements of seaplanes.

Berthing and anchorage.—The Maritime office of Consorzio Autonomo del Porto (the Harbour Association) is situated on Ponte dei Mille, a pier about 4 cables northward of Molo Vecchio light- 30 structure. The Association authorises and regulates the entry, departure and movements of all vessels in Porto di Genova and arranges all berths.

Vessels anchoring temporarily in Avamporto should leave a clear passage for vessels entering or leaving the port. 35

During winter, the Tramontana (Northerly wind) often blows with violence making it necessary for vessels to strengthen their moorings. The Scirocco (South-easterly wind) and Libeccio (South-westerly wind) cause a slight sea in the port.

Molo Duca di Galleria is reserved for men-of-war, for the temporary 40 berthing of vessels from an infectious locality, for vessels leaving the port, or for vessels awaiting a berth at the quays.

Molo Umberto Cagni is reserved for berthing dismantled vessels.

Molo Giano is reserved for men-of-war, for vessels in quarantine and for vessels with inflammable cargoes. 45

Molo Guardianio (*Lat. 44° 24' N., Long. 8° 56' E.*) is reserved for men-of-war and merchant vessels undergoing repairs.

The berths at the remaining moles, piers and quays are all used for commercial purposes.

Port regulations.—The following are selected from the port 50 regulations:—

All vessels carrying inflammable material or explosives should be berthed on arrival in Avamporto to carry out the unloading operations into lighters or as directed by the port authorities.

Charts 1461, 3909, 157, 1780, 160, 2158a, 449.

Chart 1461, plan of Genoa.

Vessels berthed at wharves where cargoes are being discharged should have the funnels covered by metal gauze netting. Vessels which are loading or discharging cotton, jute, straw, hay, and other inflammable goods, should also keep the galley funnels covered, and lighting fires and smoking is strictly prohibited aboard such vessels.

Ashes or refuse of any kind must not be discharged into the harbour or within 2 miles of the coast in its approaches. Refuse will be transported from vessels by the appropriate service on request to the port authorities.

Adjustment of compasses.—A buoy for the use of vessels swinging for the adjustment of compasses is moored about $1\frac{1}{4}$ cables eastward of the head of Molo Umberto Cagni. The signal station at Portofino (page 246) is one of the best objects to swing on; its true bearing from the buoy is $114^{\circ} 06'$.

City. — Trade and shipping. — Radio station. — The city of Genova-Centro, which in 1950 had a population of 676,071, lies chiefly eastward of Avamporto and Porto Vecchio. It is built like an amphitheatre on the slopes of a steep range of hills which surround the harbour at the base of the Ligurian Apennines. Landing from the harbour is permitted anywhere without luggage. The best places are at Calata degli Olii Minerali on the western side of Bacino delle Grazie, and at Ponte dei Mille, on the northern side of Porto Vecchio.

British Consular officers are stationed at Genova.

The chief imports are coal, wood, cotton, iron, phosphates, mineral oil, cellulose, cereals and hides.

The principal exports are textiles, machinery, oils, automobiles, soap, electric cables and manufactured goods in general.

There is regular sea communication with all parts of the world.

There is a radio station at Genova, *see* page 16.

Port facilities.—Deratisation.—Large stocks of coal are normally maintained.

Large stocks of fuel oil and moderate stocks of diesel oil are normally maintained.

Fresh provisions and supplies of all kinds are plentiful. Water is laid on to all quays and is also supplied by water boats on request.

Large repairs can be undertaken. There are five dry docks in the port. For details of the largest, *see* Appendix I, page 519. There is a small slipway, suitable for tugs and lighters, situated close south-eastward of the root of Molo Umberto Cagni (*Lat.* $44^{\circ} 24' N.$, *Long.* $8^{\circ} 56' E.$).

All the quays and piers are fitted with elevators and cranes for working cargo. There are a number of pontoon floating cranes and sheer legs, the largest of which has a lifting capacity of 150 tons.

There are numerous tugs of which some are ocean-going. A salvage vessel is available.

The civil hospitals at Genova receive seamen.

Deratisation can be carried out, *see* page 18. The disinfecting station is at Calata alla Sanita, close westward of Ponte Pietro Paleocapa.

Climatic Table.—*See* page 41.

Charts 1461, 3909.

EASTERN APPROACHES TO GENOVA.—Aspect.—Vessels approaching Porto di Genova from eastward will readily identify

Charts 157, 1780, 160, 2158a, 449.

Charts 1461, 3909.

Torre Quezzi (page 237), Monte Fascie, 2,733 feet (833^{m0}) high, situated about 3 miles east-south-eastward of Torre Quezzi with a conspicuous white cross on the western end of its summit, and Monte di Santa Croce, 1,719 feet (523^{m9}) high, situated about 3 miles south-eastward of Monte Fascie and surmounted by a chapel in front of which is a small clump of trees. On a closer approach, the high modern buildings of Foce, amongst which the cupola of San Pietro, situated about 1½ cables north-north-westward of Punta Vagno, will be distinguished, and within the latter point a succession of stone arches, supporting a promenade, will be seen.

Chart 1461.

The houses of Boccadasse are grouped around a small cove encumbered by rocks, about 9 cables eastward of Punta Vagno light-structure, and on the western side of the cove is a square belfry surmounted by a cupola. Between Boccadasse and Punta Priaruggia, a point about 9 cables eastward on which is a bronze monument, the coast forms a bight on the shores of which are the villages of Vernazzola and Sturla.

Measured distance.—A measured distance has been established off the coast south-eastward of Porto di Genova, and is indicated by pecked lines on chart 1461. The eastern limit is defined by the belfry at Boccadasse in line with Forte Richelieu, bearing 022°. The western limit is defined by the alignment of San Giacomo belfry, situated about a quarter of a mile eastward of the root of Molo Umberto Cagni, and an old light-tower, situated on the coast about 2 cables south-south-westward of the belfry, bearing 026°. The running mark is defined by Lanterna light-structure, bearing 306°.

The measured distance is divided into two sections by the alignment of Torre Quezzi and San Pietro cupola, bearing 023°. The length of the north-western section is 4,205 feet (1,281^{m7}) and of the south-eastern section, 6,386 feet (1,946^{m4}).

Genova-Quinto al Mare.—Genova-Quinto al Mare, situated on the coast about one mile eastward of Punta Priaruggia, had a population of 1,496 in 1947; there are numerous villas with fine gardens this suburb. The chapel of San Erasmo with a yellowish belfry on its eastern side; a large building with a brick chimney close eastward of it; and a church with a belfry surmounted by a grey cupola, are all prominent. A pier, about 100 feet (30^{m5}) long, projects from the coast in front of San Erasmo chapel. There are depths of 13 feet (4^{m0}) alongside the pierhead and small vessels with local knowledge may berth there in calm weather.

Genova-Nervi.—Anchorage.—Genova-Nervi, a popular tourist resort with numerous large hotels and fine villas had, in 1947, a population of about 4,000; it lies on the eastern side of the mouth of Torrente Nervi, which flows into a small cove about 1½ miles eastward of Punta Priaruggia. Westward of the town and near the western shore of the cove is the prominent yellow building of Collegio Emiliani with a small belfry and cupola. About 3 cables east-north-eastward of the head of the cove is the belfry of Nervi church (*Lat.* 44° 23' N., *Long.* 9° 02' E.), painted yellow with a black cupola. Torre Gropallo, a square tower of rough plaster, with a pinnacle at each corner, stands close to the coast about 4 cables eastward of the cove.

A mole extends about 328 feet (100^{m0}) from the western shore of

Charts 3909, 157, 1780, 160, 2158a, 449.

Chart 1461.

the cove close to Collegio Emiliani, forming a small harbour in which there are depths of from 6 to 13 feet (1^m8 to 4^m0). The entrance is about 50 feet (15^m1) wide and small craft with local knowledge can
 5 berth at a quay about 262 feet (79^m9) long on the western side of the harbour. This harbour is subject to silting owing to deposit brought down by Torrente Nervi; access to the harbour is not possible in bad weather.

Vessels with local knowledge may obtain temporary anchorage off
 10 the cove, in depths of from 8 to 9 fathoms (14^m6 to 16^m5), sand. Small vessels may anchor closer inshore, in depths of from 3½ to 4 fathoms (5^m9 to 7^m3).

Chart 3909.

COAST.—Nervi to Sori.—Anchorage.—Between the mouth of
 15 Torrente Nervi and Bogliasco, about 1½ miles eastward, the coast is fringed with numerous rocks extending about one cable offshore; a rocky spit with depths of from 6 to 16 feet (1^m8 to 4^m9) over it, extends about 1½ cables offshore from a position about 7 cables eastward of the mouth of Torrente Nervi. The slopes of the hills on this stretch of
 20 coast are covered with vegetation and dotted with houses; among the latter, the Eden hotel, a large, light-yellow building standing a little inland, is prominent.

Bogliasco, a town with a population of 4,894 in 1947, may be identified by a high stone viaduct with arches which crosses Torrente del
 25 Poggio in the middle of the town. The light-coloured belfry of Santa Maria di Bogliasco is situated near the coast close westward of Torrente del Poggio and the white spire of Sessarego may be seen on a hill northward of the town at an elevation of 981 feet (299^m0). In calm weather, landing may be effected from boats at one of two stone
 30 groynes which protect the beach fronting the town from erosion.

Vessels with local knowledge may obtain temporary anchorage southward of the viaduct at Bogliasco, where there are depths of 5 fathoms (9^m1) about 1½ cables offshore.

Charts 3908 and 3909.

35 From Bogliasco, the coast trends about one mile east-south-eastward to Torre del Punta Legno, and thence about half a mile eastward to Sori, a town situated on either side of the mouth of Torrente Sori, at the head of a small bay. Torre del Punta Legno is a dark, square tower, 55 feet (16^m8) in height, which stands among dark pine trees
 40 and is not easily distinguished from seaward. The summit of Monte di Santa Croce lies about 7 cables northward of the tower, and on its slopes, about half a mile south-south-eastward of the summit, the square belfry of Pieve Ligure, painted yellow with white cornices, stands at an elevation of 574 feet (175^m0).

Chart 3908.

Sori, a town with a population of 4,430 in 1947, may be identified by a concrete railway viaduct which crosses the mouth of Torrente Sori (*Lat. 44° 22' N., Long. 9° 06' E.*), and by a large road bridge close
 50 northward of the viaduct. The belfry of Sori church, standing near the coast close westward of the viaduct, is also prominent.

Vessels with local knowledge may obtain anchorage off Sori, in depths of about 8 fathoms (14^m6), weed; farther offshore, in depths of 11 fathoms (20^m1) and over, the bottom is rocky. The bottom is also

Charts 157, 1780, 160, 2158a, 449.



Fte. Castellaccio. Fte. Ratti.

*S. Pietro della Foce,
bearing 077°, distant 1·6 miles.*

*M. Fascie.
Boccadasse.*

Genova from southward.

(Original dated 1921.)

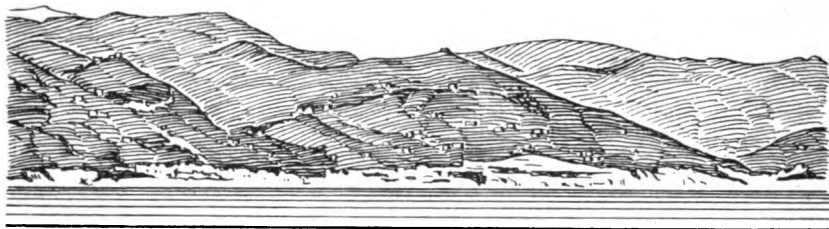


Quarto.

*Monte Fascie,
bearing 020°, distant 6·5 miles.*

Coast about 2 miles eastward of Genova.

(Original dated 1921.)



Mte. Giugo.

*Mte. S. Croce, bearing 046°,
distant 6·5 miles.*

Coast about 5 miles eastward of Genova.

(Original dated 1921.)



Recco.

Camogli.

*Old signal
station.*

*Punta di Portofino,
bearing 097°,
distant 19 miles.*

Promontorio di Portofino from westward.

(Original dated 1921.)



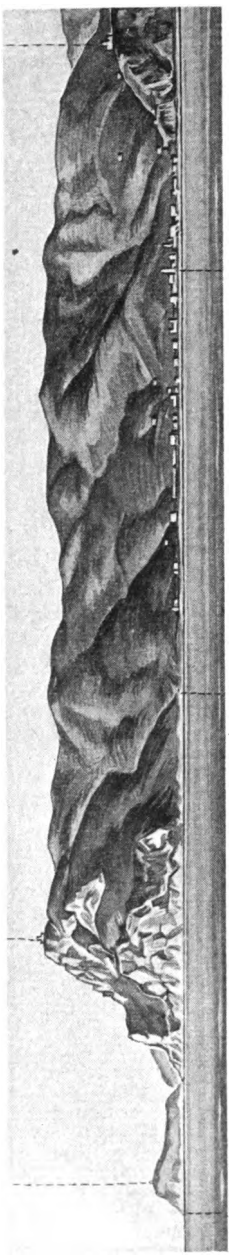
*S. Giacomo
belfry.*

S. Margherita.

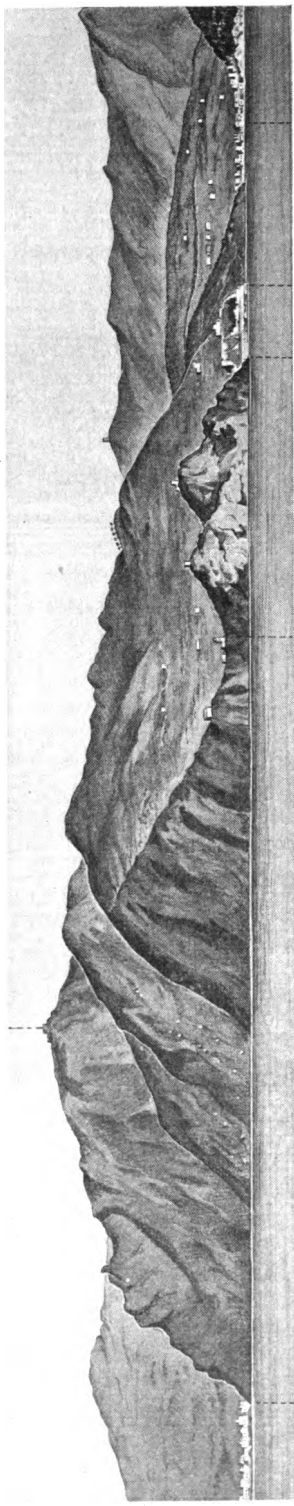
*Caravaggio chapel.
Villa Spinola, bearing 318°,
distant 9 cables.*

Santa Margherita from south-eastward.

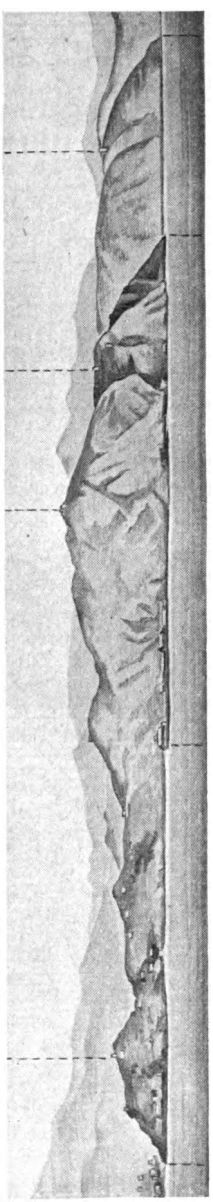
(Original dated 1921.)



Punta Crena. *Capo di Noli.* *Il Grugno.* *Noli church belfry, bearing 261°, distant 2 miles.*
Signal station. **Capo di Noli from east-north-eastward.**
(Original dated prior to 1947.)
Old signal station.



Punta della Chiappa. *Portofino.* *Punta Pagana.* *Rapallo.*
Promontorio di Portofino from southward. *Punta di Portofino, bearing 000°, about 4 miles*
(Original dated 1877.) *Tower.*
Monte Castello. Old signal station.
Torre Marconi.



Punta di Sestri. *Punta Negra.* *Punta Manara.* *Punta Basse.*
Punta di Sestri from west-south-westward.
(Original dated prior to 1947.)

Chart 3908.

rocky and unfit for anchorage off the coast between Torre del Punta Legno and the western end of Sori.

The anchorage off Sori is preferable to that off Genova-Quinto al Mare, Genova-Nervi or Bogliasco, as Promontorio di Portofino (page 246) 5 affords it some protection from south-easterly winds.

Sori to Recco.—Anchorage.—There are numerous fine villas and large houses along the coast between Sori and Recco, a town about $1\frac{1}{2}$ miles east-south-eastward. The light-coloured belfry of Sant' Apollinare, situated about half a mile eastward of Sori at an elevation of 873 feet (266^m1), and the larger belfry of Polanesi, situated close to the coast about half a mile farther east-south-eastward, at an elevation of 348 feet (106^m1), are both prominent. The small church of Sant' Uberto, which has no belfry, stands at an elevation of 1,575 feet (486^m1) about 6 cables northward of Polanesi belfry, and a high column 15 surmounted by a statue of Christ stands close to Sant' Uberto and is plainly visible from seaward.

Recco, an ancient town with a population of 5,441 in 1947, lies on the eastern side of Torrente Recco, which flows into the head of a small bay and is crossed close within its mouth by a stone viaduct with high 20 arches. There are two belfries in the eastern part of the town, one with a cupola painted in grey and white horizontal bands. About a quarter of a mile northward of Punta Santa Anna, the rocky western entrance point of the bay, at an elevation of 381 feet (116^m1), is Megli belfry, surmounted by a small green cupola. There is a large and prominent 25 bathing establishment on a shingle beach which fronts the town of Recco.

A detached breakwater, about 600 feet (182^m9) long, extends across the entrance to the small bay eastward of Punta Santa Anna; the ends of this breakwater are about 300 feet (91^m4) from the coast on 30 either side of the bay, but there are numerous shoals, and access to the bay is confined to small craft with local knowledge.

Vessels with local knowledge may obtain anchorage, sheltered from south-easterly winds, in depths of about 20 feet (6^m1), sand, south-eastward of Punta Santa Anna. 35

Porto di Camogli. — Lights. — Port facilities. — A succession of villas stretches along the coast between Recco and Camogli, an ancient ship-building town with a population of 7,923 in 1947, situated about three-quarters of a mile south-eastward of Punta Santa Anna. The town is built on the lower part of the steep slopes of Monte Esoli, 40 1,401 feet (427^m0) high, and is overlooked by the village and belfry of Ruta, which stands on the summit of a hill about half a mile south-south-eastward of Monte Esoli. The coast between Recco and Camogli is dominated by the chapel of Caravaggio, an isolated, low and light-coloured building with a stumpy belfry, situated on the 45 summit of a peak, 2,011 feet (613^m0) high, about $1\frac{1}{2}$ miles east-north-eastward of Recco.

Porto di Camogli (*Lat.* 44° 21' N., *Long.* 9° 09' E.) is formed by a mole extending about 525 feet (160^m0) north-westward from the coast along a rocky spit, which affords some shelter to a narrow harbour which is 50 only available to small craft. A spur extends a short distance north-eastward from a position about midway along the mole and affords further shelter to an inner harbour; the latter is the only part of the port where vessels can lie in bad weather, and it is therefore nearly

Chart 3908.

always occupied by small craft. The depths in the middle of the inner harbour do not exceed 12 feet (3^m7) and access to the narrow entrance is at times difficult and dangerous with westerly, and even south-
 5 westerly, winds. There is a mooring buoy in the harbour.

A light is exhibited, at an elevation of 28 feet (8^m5), from a white framework structure situated on the head of the mole.

A light is exhibited, at an elevation of 21 feet (6^m4), from a concrete post, 13 feet (4^m0) in height, situated at the extremity of the spur
 10 extending north-eastward from the middle of the mole.

A light is exhibited, at an elevation of 21 feet (6^m4) from a post on a concrete base, 16 feet (4^m9) in height, situated on the north-eastern side of the entrance to the inner harbour, about 115 feet (35^m0) north-eastward of the extremity of the spur.

15 Small supplies of liquid fuel are stocked and moderate supplies of fresh provisions can be obtained.

A 2-ton crane is available on the mole. Repairs to small craft can be undertaken and there is a slipway capable of taking fishing boats, tugs, etc.

20 **Anchorage.—Directions.**—Vessels with local knowledge can obtain anchorage in depths of from 9 to 10 fathoms (16^m5 to 18^m3), sand, about 1½ cables south-westward of the light-structure on the head of the mole. Small vessels can anchor in line with the mole in depths of about 5½ fathoms (10^m1). These anchorages are tenable only
 25 in fine weather, and with bad south-westerly weather local small craft usually anchor off Punta della Chiappa (page 247).

Vessels approaching Porto di Camogli should keep at a distance of not less than 164 feet (50^m0) from the mole head when rounding it, in order to carry a depth of 10 feet (3^m0). When entering the harbour,
 30 they should keep on a line passing midway between the light-structures situated on either side of the entrance to the inner harbour.

Currents.—The current in the offing sets westward but there is usually an east-going counter-current inshore, which is more pronounced off Punta della Chiappa, particularly during south-westerly winds.

35 **Porto di Camogli to Punta della Chiappa. — Beacons. — Signal station.—Anchorage.**—Between the entrance to Porto di Camogli and Punta della Chiappa, about 1½ miles southward, the coast forms the western side of Promontorio di Portofino, the most prominent of the numerous projections on the north-western coast of Italy.
 40 Monte di Portofino, its highest part, rises to an elevation of 2,001 feet (609^m9) in the south-western part of the promontory, about one mile east-north-eastward of Punta della Chiappa and on its summit is an old signal station; a new signal station and several old forts are situated on the lower summits. See views facing pages 244 and 245.
 45 The stretch of coast between Porto di Camogli and Punta della Chiappa, is high, rocky and steep-to, and may be closely approached. Within the coast, the steep hills are covered with pine woods amongst which numerous scattered houses and villas may be seen. San Rocco village, with a belfry surmounted by a black cupola, stands on a hill
 50 787 feet (239^m0) high, about one mile southward of Camogli, and about 4 cables farther southward is the village of San Nicolò, abreast which is a good landing place for boats.

A beacon, painted white with a black vertical stripe, stands on the south-eastern slopes of Monte Esoli.

Charts 157, 1780, 160, 2158a, 449.

Chart 3908.

Punta della Chiappa (*Lat. 44° 19' N., Long. 9° 09' E.*) projects about 1½ cables south-westward from the western extremity of Promontorio di Portofino; it is low, bare and dark. Near the root of this projection is a square pillar of a yellowish colour, and a beacon, painted white with a black vertical stripe, stands in the middle of the projection. There is a landing place for boats on the northern side of the projection. 5

A signal station, consisting of a house painted in black and white chequers, with a flagstaff close to it, stands at an elevation of 1,542 feet (470^m0) on the summit of Monte Tocco, about 6 cables eastward of the extremity of Punta della Chiappa. Storm warning signals are displayed at the station. See page 11. 10

It is reported that small vessels can obtain safe anchorage about one cable northward of the root of Punta della Chiappa, in depths of about 27 fathoms (49^m4). Vessels should take a stern hawser to a mooring post, situated abreast the southernmost house on the coast, close southward of the edge of a pine wood. Vessels so moored will ride out bad south-westerly weather. 15

Fishing nets.—Tunny fishing nets extend about 2½ cables in a south-westerly direction, in a position off the coast about one mile southward of Camogli. The limits of the nets are marked by buoys. See page 11. 20

Charts 3210 and 3908.

Punta della Chiappa to Punta di Portofino.—Beacon.—Light. 25
—From Punta della Chiappa, the high, perpendicular and steep-to coast trends about 3½ miles east-south-eastward to Punta di Portofino, the south-eastern extremity of the promontory of that name. Cala dell'Oro and Insenata San Fruttuoso are two small open bays situated about three-quarters of a mile, and 1½ miles, respectively, east-south-eastward of Punta della Chiappa; they are separated by a sharp ridge terminating in a rocky promontory, 338 feet (103^m0) high, on which is an old square tower. At the head of Insenata San Fruttuoso is a group of houses overlooked by the cupola of the ancient Doria monastery, in the crypt of which are the tombs of the noted admirals of this historic family. An isolated high square tower stands close eastward of the group of houses. 30 35

In calm or northerly weather, small vessels with local knowledge may obtain anchorage, in a depth of 13 feet (4^m0), sand, near the head of Insenata San Fruttuoso; steps for two landing places are cut in the rock on either side of a small shingle beach in front of the group of houses. 40

Punta di Portofino is the south-eastern extremity of a small peninsula connected with the mainland by an isthmus which forms the head of Portofino harbour (page 248). Within the point, which is bare, rocky and bold, and surmounted by a square white pillar, the land rises to a green hill 328 feet (100^m0) high, on which stand the old forts of Castelletto and Castello Brown. Some of the more elevated houses of the village of Portofino may be seen about 3 cables north-westward of Castelletto. 45

A light is exhibited, at an elevation of 131 feet (39^m9), from a small tower at the south-eastern corner of a yellow, two-storeyed house, 43 feet (13^m1) in height, situated close within the extremity of Punta di Portofino. A statue of the Madonna stands on the slope of the hill near the light-structure. 50

Charts 157, 1780, 160, 2158a, 449.

Charts 3210 and 3908.

Measured distance.—There is a measured distance between Punta della Chiappa and Punta di Portofino.

Chart 3210.

- 5 **GOLFO MARCONI.**—**General remarks.**—Golfo Marconi (Golfo di Rapallo) is entered between Punta di Portofino (*Lat.* 44° 18' N., *Long.* 9° 13' E.) and the town of Chiavari, about 4½ miles east-north-eastward, and the gulf extends about 2¾ miles north-north-westward to the town of Rapallo at its head. The shore of this gulf is considered to be the most picturesque in the two Italian rivas. Small vessels can obtain good shelter in some of the bays on the western side of the gulf, but its north-eastern side is exposed to southerly and south-westerly winds.

- 15 Fresh north-easterly winds are predicted by an exceptionally clear atmosphere and light clouds scattered high above the mountains around Rapallo and Chiavari.

- Portofino. — Lights. — Port facilities.** — The harbour of Portofino, which affords one of the best harbours of refuge on the coast of Riviera di Levante, is entered between Punta del Coppo, situated about 3½ cables north-westward of Punta di Portofino, and the coast about one cable west-north-westward. Punta del Coppo is the northern point of the small peninsula forming the south-eastern extremity of Promontorio di Portofino, and the village of Portofino is situated at the south-western corner of the harbour. The shores of the harbour are covered in vegetation and the village is a popular tourist resort and contains a large hotel and several villas.

A light is exhibited, at an elevation of 31 feet (9^m4), from an iron structure, 15 feet (4^m6) in height, situated on Punta del Coppo.

- 30 A light is exhibited, at an elevation of 23 feet (7^m0), from a white structure, 15 feet (4^m6) in height, situated on the north-western entrance point of Portofino harbour; the light-structure is close north-eastward of the Health office, a building painted yellow with green slatted shutters which is the north-easternmost house on the point.

- 35 The north-western side and the head of the harbour are completely lined with quays except at the south-western corner of the head where there is a small beach. L'Isolotto, a rock close off the southern part of the head of the harbour, is connected with the shore by a short mole; there are numerous bollards and ring bolts on the quays and on l'Isolotto.

The best berth in the harbour is under the lee of Punta del Coppo, heading north-eastward, with the stern secured to l'Isolotto. Small craft of a draught up to 8 feet (2^m4) can moor between l'Isolotto and a small jetty about 400 feet (121^m9) westward.

- 45 The harbour is sheltered from all directions except north-eastward but the Gregale, or north-easterly wind, causes little sea as its force is reduced by the north-eastern side of Golfo Marconi. Strong south-westerly winds usually cause a troublesome movement of the water in the harbour, due to the sea being deflected from the rocky north-eastern shore of the gulf.

Vessels entering the harbour or navigating in the vicinity must keep a look out for fishing nets which are frequently laid out in this neighbourhood.

Charts 3908, 157, 1780, 160, 2158a, 449.

Chart 3210.

Small quantities of fresh provisions may be obtained. Water is laid on to the quay on the north-western side of the harbour.

There is a 2-ton hand crane on the small jetty at the head of the harbour.

Coast.—Anchorage.—From the north-western entrance point of Portofino harbour (*Lat. 44° 18' N., Long. 9° 13' E.*), the coast trends about $1\frac{1}{2}$ cables north-eastward to Punta Caieca (Cajeca point), a point on which is a prominent isolated villa with a sloping roof surmounted by a small tower. Punta Caieca is the southern entrance point of Paraggi, an inlet with a small beach at its head within which are a few houses and a large and prominent hotel. Castello di Cervara, situated about $2\frac{1}{2}$ cables northward of Punta Caieca, is built on a conical rock connected with the northern entrance point of the inlet. The convent of Cervara stands at an elevation of 118 feet (36^m0), about $1\frac{1}{2}$ cables northward of Castello di Cervara; it is a long, white and isolated building, surrounded by vegetation. Close off the coast eastward of the convent is a remarkable rock named La Sedia.

Between Punta della Cervara, a point close northward of La Sedia, and Punta del Pedale, about $4\frac{1}{2}$ cables northward, the coast recedes to form Rada della Cervara, where, during offshore winds, vessels may obtain anchorage in depths of from 11 to 16 fathoms (20^m1 to 29^m3), mud, about $1\frac{1}{2}$ cables offshore.

From Punta del Pedale, the coast trends about 6 cables northward to Porto di Santa Margherita.

Porto di Santa Margherita.—Light.—Porto di Santa Margherita lies at the south-western corner of a bay entered between Punta Pagana, about one mile north-north-eastward of Punta Pedale, and the head of a mole about half a mile south-westward; the mole extends about 800 feet (243^m8) north-eastward from the coast at the southern end of Corte, a suburb southward of the city of Santa Margherita Ligure. See view facing page 244.

A light is exhibited, at an elevation of 39 feet (11^m9), from an iron framework structure on a circular stone hut, 38 feet (11^m6) in height, situated on the head of the mole.

The city of Santa Margherita Ligure lies spread out between the root of the mole and Punta Pagana on the shores of the bay and on the lower slopes of the hills surrounding it. These hills are covered with dark vegetation amongst which several large hotels may be distinguished. The city appears to be divided into two parts by an old fortress, situated close to the north-western entrance point of the harbour, about $1\frac{1}{2}$ cables north-westward of the mole head, the northern part being Santa Margherita proper, and the southern part, the maritime quarter of Corte. In 1947 the city, which is a popular tourist resort, had a population of about 10,700; it is brilliantly lighted at night when it is visible from some distance seaward.

The port may be identified by the church of San Giacomo, with a white façade and tall belfry, which stands at an elevation of 118 feet (36^m0) about a quarter of a mile west-north-westward of the mole head and is readily distinguished from seaward. Other prominent landmarks are:—The chapel of Caravaggio (page 245); the twin belfries and black cupola of Santa Margherita parochial church, situated about $1\frac{1}{2}$ cables northward of San Giacomo belfry; the Imperial Hotel, a large building situated on the wooded slopes close eastward of the head

Chart 3210.

of the bay; and Villa Pareto-Spinola, the lower part of which is painted red and the upper part yellow, and surmounted by a square tower, situated about one cable westward of Punta Pagana (*Lat.* 44° 5 20' N., *Long.* 9° 14' E.).

Harbour.—Quayage.—The harbour is entered between the mole head and the coast under the old fortress about $1\frac{1}{2}$ cables north-westward and it extends about $1\frac{1}{2}$ cables south-eastward from the entrance. There are depths of over 26 feet (7^m9) in the entrance except close to
10 the mole head which should be given a berth of at least 115 feet (35^m0). The head of the harbour, the north-western side and the inner part of the mole are all faced with quays, and vessels up to 15 feet (4^m6) draught and not exceeding 260 feet (79^m2) in length, may berth at these quays; vessels berth end-on to the quays, with the stern about
15 33 feet (10^m1) from it in fine weather and about 66 feet (20^m1) in bad weather.

In winter, there is often a considerable sea in the harbour, especially with strong south-westerly winds.

A pier, suitable only for boats to lie alongside, projects 141 feet
20 (43^m0) eastward from the coast about 2 cables north-north-westward of the mole head.

Anchorage.—The anchorage off Porto di Santa Margherita is considered preferable to that off Rapallo (page 251) as it is more sheltered from south-westward and has a better landing place. Vessels should
25 approach keeping San Giacomo belfry bearing 270° and should anchor in depths of from $7\frac{1}{2}$ to 8 fathoms (13^m7 to 14^m6), when the inner or north-western side of the mole is seen. Small vessels can anchor, in depths of about 5 fathoms (9^m1), on the line joining the mole head and the old fortress.

30 In 1934, H.M.S. *Resolution* anchored with the head of the mole bearing 290°, distant 4 cables.

Port facilities.—Small quantities of liquid fuel are maintained.

Moderate quantities of fresh provisions can be obtained and water is laid on to the quays at the head, and on the north-western side, of the
35 harbour.

There is a hospital of moderate size in Santa Margherita Ligure.

There is a slipway capable of taking vessels not exceeding 150 tons, situated near La Valetta, a beach close southward of the root of the mole.

40 **Punta Pagana to Rapallo.**—Between Punta Pagana and Punta Langan, about $3\frac{1}{2}$ cables north-north-eastward, the coast forms two small coves separated by a wooded point on which stands the church of San Michele with a belfry half hidden by trees. The ruins of an old castle may be seen amongst the trees near the extremity of Punta
45 Pagana and the shores of Insenatura di Pagana, the southern cove, are thickly wooded. At the head of Porto San Michele, the northern cove, is the small village of San Michele in front of which is a landing place. Between the village and the town of Rapallo, about $3\frac{1}{2}$ cables northward, the coast is lined with villas, of which one on Punta Langan,
50 painted yellow, is prominent.

Rapallo.—Light.—Rapallo, a tourist resort which is frequented at all seasons, lies at the head of a small bay which forms the head of Golfo Marconi. The town is situated on a plain around the mouths of Rio Bogo and Torrente San Francesco, and is backed by high land. In

Chart 3210.

1947, Rapallo had a population of 13,947; there is a hospital of moderate size in the town.

The bay is entered between the head of Molo Carlo Alberto, which extends about 200 feet (61^m0) north-eastward from the coast about 2 cables north-north-eastward of Punta Langan, and a point about 3 cables farther eastward. A spit, with depths of 2 fathoms (3^m7) over its extremity, extends about one cable south-westward of the eastern entrance point of the bay.

A light is exhibited, at an elevation of 25 feet (7^m6), from a red iron framework structure on a conical stone tower, 16 feet (4^m9) in height, situated near the head of Molo Carlo Alberto.

Prominent landmarks are:—The belfry of the parochial church (*Lat. 44° 21' N., Long. 9° 14' E.*), painted red and yellow and situated in the centre of the town, about 3½ cables northward of the head of Molo Carlo Alberto; the red building of the Excelsior Casino, standing among a thick grove of pines about one cable south-westward of the mole, and close westward of it, the large building of the Excelsior Hotel partly hidden by trees; an ancient square fort with a tower, situated close eastward of the mouth of Torrente San Francesco, about 2½ cables north-north-eastward of the mole head; the chapel of Montallegro, situated at an elevation of 2,008 feet (612^m0) near the summit of Monte Rosa, about 1½ miles north-eastward of the town; and the prominent and isolated white church of Sant' Ambrogio with a white belfry, situated at an elevation of 640 feet (195^m1) on a hillside about one mile east-south-eastward of the town.

The area sheltered from south-eastward by Molo Carlo Alberto is small in extent and has depths of from 5 to 7 feet (1^m5 to 2^m1), and can only be used by boats and small craft.

Except with offshore winds, communication with the shore is difficult and with strong southerly winds is at times impracticable. The best landing place is at the head of Molo Carlo Alberto.

A concrete pier about 200 feet (61^m0) long, with a depth of 4 feet (1^m2) alongside the head, projects from the shore of the bay close southward of the mouth of Rio Bogo. Caution is necessary when approaching this pier as a one-foot (0^m3) patch, marked by an iron post, lies about 82 feet (25^m0) eastward of the head of the pier. There are two other small piers; one, with a depth alongside its head of 3 feet (0^m9), lies about three-quarters of a cable north-north-eastward of the mouth of Rio Bogo, and the other, with a depth of 6½ feet (2^m0) alongside its head, lies about three-quarters of a cable westward of the mouth of Torrente San Francesco.

Anchorage off Rapallo is very exposed and is only possible in fine weather. Small vessels with local knowledge may anchor in depths of about 13 feet (4^m0), about 1½ cables north-north-eastward of the head of Molo Carlo Alberto.

Coast.—Rapallo to Chiavari.—From Rapallo, the coast trends about 1½ miles east-south-eastward to Punta Stella, the south-eastern entrance point of a small cove with rocky shores and a short, steep gravel beach at its head. The belfry of San Pantaleo, standing at an elevation of 538 feet (164^m0), about 4 cables south-eastward of Sant' Ambrogio belfry, is prominent on this stretch. Torrente Stella flows into the head of the cove, and the village of Zoagli, which had a population of 2,619 in 1947, lies stretched along the shore of the cove.

Charts 3908, 157, 1780, 160, 2158a, 449.

Chart 3210.

There is a large railway viaduct with seven arches close within the mouth of Torrente Stella, and about one mile above the river mouth, the belfry of Semorile stands at an elevation of 856 feet (260^m9).

- 5 In fine weather, small vessels with local knowledge may obtain temporary anchorage off Zoagli about one cable offshore, in depths of about 5 fathoms (9^m1), mud and good holding ground. There is a landing place at the western end of the beach at the head of the cove.

- From Punta Stella, the rocky coast trends about 1½ miles east-south-eastward to Punta Chiappe and is overlooked by Monte Enchetta, 1,804 feet (549^m9) high, situated about one mile east-north-eastward of Zoagli. On the slopes of Monte Enchetta is Rovereto belfry, situated at an elevation of 574 feet (175^m0) above a triangular bare patch, and at a similar elevation about 6 cables farther east-south-eastward is 15 the hamlet of Sant' Andrea in which is a belfry with a black cupola.

- About 3 cables east-north-eastward of Punta Chiappe, the chapel of Madonna della Grazie (*Lat.* 44° 20' N., *Long.* 9° 18' E.), a long low building, painted white with a small tower, stands at an elevation of 607 feet (185^m0), close above a light-coloured bare patch, and is 20 prominent; southward of the chapel, a wide sandy beach stretches east-south-eastward without a break for about 4 miles.

Charts 3210 and 3908.

- Chiavari.—Anchorage.**—Chiavari, an industrial town as well as a popular bathing resort, had a population of 17,520 in 1947. It is 25 situated on a fertile plain about one mile east-south-eastward of Punta Chiappe and on the north-western side of the mouth of Fiume Entella, one of the largest rivers on the north-western coast of Italy.

- Colonia Marina di Chiavari, a high building painted in red and white horizontal bands, stands on the coast north-westward of the town, 30 about half a mile south-eastward of Punta Chiappe and is easily recognised. The parish church and its belfry are both surmounted by black cupolas, and south-eastward of the church and near the coast is a convent with a black cupola surmounted by a small green copper dome. Close behind the centre of the town is an ancient grey turreted 35 fortress.

- Vessels with local knowledge may obtain temporary anchorage off Chiavari; there are depths of about 3 fathoms (5^m5) about 1½ cables offshore and of 5 fathoms (9^m1) about 3¼ cables offshore. For convenience of communication with the shore, the best berth is with the 40 parish church in line with the ancient fortress, as the landing place, which is of coarse gravel, is on this alignment.

- Currents.**—The current usually sets south-eastward close to the coast and is sometimes perceptible and sometimes very weak. When bad weather is approaching, usually beginning from south-eastward, 45 the current inshore generally sets westward.

Chart 3908.

- COAST.—Chiavari to Punta di Sestri.**—The town of Lavagna which, in 1947, had a population of 8,615, is situated on the south-eastern side of the mouth of Fiume Entella. It is dominated by the 50 church of San Stefano, which has a large black cupola and a white façade facing seaward and flanked by twin belfries. Close south-eastward of the town is a long, low, yellowish factory with a tall chimney and about 4 cables south-eastward of the town is a dark, square

Charts 157, 1780, 160, 2158a, 449.

Chart 3908.

tower with two rows of windows. From an offing, Lavagna and Chiavari appear to form one town.

From the mouth of Fiume Entella, the coast trends about $2\frac{1}{2}$ miles south-eastward to Cavi, a village built round a white church with a cupola, and thence trends about $1\frac{1}{2}$ miles south-eastward and southward to Punta di Sestri. The wide sandy beach continues as far as Cavi, but the mountains gradually approach the coast which, south-eastward of the village, consists of bare, rocky cliffs backed by steep slopes which are densely wooded in places. The belfry of Santa Giulia, situated at an elevation of 820 feet (249^m9), about midway between Lavagna and Cavi, is a good landmark on this stretch.

Chart 157, plan of Rada di Sestri Levante.

Punta di Sestri (Lat. $44^{\circ} 16' N.$, Long. $9^{\circ} 23' E.$) is the north-western extremity of a rounded and wooded peninsula of the same name which projects about 4 cables west-south-westward from the coast; a low and narrow isthmus, which in ancient times did not exist, unites the peninsula with the mainland. Torre Marconi, a massive round tower, stands at an elevation of 131 feet (39^m9) on the summit of the peninsula; it is only visible from southward and westward, being hidden by trees from other directions.

Charts 157, plan of Rada di Sestri Levante, 3908.

Sestri Levante. — Light. — Anchorage. — The town of Sestri Levante, which had a population of 16,237 in 1947, is situated partly on Promontorio di Sestri and partly on a small plain at the mouth of Torrente Gromolo which enters the sea about 4 cables north-eastward of Punta di Sestri. The belfry of Santa Giulia, described above, shows up on the sky line north-westward of the town, and the belfries of San Stefano, a red building standing out against a wooded background, and San Bernardo, small, pointed and at an elevation of 610 feet (185^m9), may be seen about one mile east-north-eastward, and $1\frac{1}{2}$ miles north-eastward, respectively, of Punta di Sestri. Ospizio Marino, a building painted in black and white stripes and surmounted by a small square tower, is situated on the south-eastern extremity of Promontorio di Sestri and is prominent when seen from southward.

Chart 157, plan of Rada di Sestri Levante.

A mole, 541 feet (164^m9) long, quayed on its inner side, projects north-north-westward from Punta di Sestri; it is not easy to distinguish from north-westward against a rocky background.

A light is exhibited, at an elevation of 26 feet (7^m9), from a concrete post, 20 feet (6^m1) in height, situated close to the head of the mole.

In 1948, fishing boats and small craft of a draught not exceeding 10 feet (3^m0) could berth alongside the mole; other vessels anchored and secured their sterns to it. During strong winds from between west-north-westward and west-south-westward, a considerable sea sets into the bight between Promontorio di Sestri and the coast of the mainland, and vessels with sterns secured to the mole ride badly, owing to the swell and to a strong current which takes them abeam; in these circumstances it is preferable to lie at single anchor in the bight. Owing to deposit brought down by Torrente Gromolo, the depths in the bight are decreasing and the beach fringing the isthmus tends to extend rapidly, especially at the south-western end, abreast the Harbour office.

Charts 3908, 157, 1780, 2158a, 449.

Chart 157, plan of Rada di Sestri Levante.

Landing can be effected at an iron pier, 66 feet (20^m1) long, about three-quarters of a cable north-westward of the Harbour office. The ruins of a larger pier lie close eastward of the root of the mole and there is a third pier, with a depth of 8 feet (2^m4) alongside its head, between these ruins and the landing pier. Lighters and small craft discharging cargo lie alongside the head of this latter pier on which there is a 5-ton crane.

There are some mooring buoys in the bight eastward of the mole.

- 10 There is anchorage in depths of from 7 to 8 fathoms (12^m8 to 14^m6), mud, about 1½ cables north-north-westward of the mole head and just not opening its eastern side. Small vessels can anchor closer inshore in depths of about 5 fathoms (9^m1), eastward of the mole and clear of any vessels lying stern-on to it.

- 15 **Port facilities.**—Moderate quantities of fresh provisions may be obtained and fresh water is laid on to the mole.

There is a hospital at which seamen are received, in Sestri Levante.

Chart 3908.

- Promontorio di Sestri to Punta Moneglia.**—The cove on the southern side of the isthmus joining Promontorio di Sestri with the mainland does not afford good anchorage and is seldom frequented. From the head of this cove, the coast trends about 1½ miles south-south-eastward to Punta Manara (*Lat. 44° 15' N., Long. 9° 24' E.*). This latter point is bold and cliffy and is the extremity of a spur extending about 4 cables south-south-westward from Monte Castello, 869 feet (264^m9) high, with a prominent building on its summit. About midway between this summit and Punta Manara is an old signal tower at an elevation of 574 feet (175^m0); in 1947, this tower was reported destroyed. See view facing page 245.

- 30 Between Punta Manara and Punta Baffe, about 1½ miles east-south-eastward, the coast forms a bay with a wide beach at its head. Extending along the beach is the village of Riva, divided into Riva Ponente and Riva Levante by Torrente Petronio which flows into the head of the bay about 9 cables east-north-eastward of Punta Manara. There is a prominent white belfry in the middle of Riva and a tall chimney stands near the eastern end of Riva Levante.

- On the eastern side of the mouth of Torrente Petronio is an iron pier belonging to the Tirreno shipyard; there are depths of about 6 feet (1^m8) alongside the head of this pier on which there are several mobile cranes. Repairs of any kind to small craft can be undertaken by the shipyard.

- At the head of the bay there are depths of about 3 fathoms (5^m5) about three-quarters of a cable offshore and of 5 fathoms (9^m1) about 1½ cables offshore. The bottom off the beach fronting Riva is sandy and good holding ground. The beach is moderately steep but in calm weather landing can be effected either on it or at the pier. With moderate south-easterly and southerly winds, landing can be effected under the lee of Punta Baffe, and with westerly and north-westerly winds, under Punta Manara.

- 50 Punta Baffe and Punta Moneglia, about 1½ miles farther east-south-eastward, are the terminating points of high, rocky spurs of Monte Moneglia, 1,709 feet (520^m9) high, situated about 1½ miles north-north-westward of the latter point. A whitish circular tower stands at an elevation of 827 feet (252^m1) about a quarter of a mile northward of

Charts 3908, 157, 1780, 160, 2158a, 449.

Chart 3908.

Punta Baffe; from westward, this tower is easily identified by a bare patch on the slope below it.

Moneglia.—Aspect.—Anchorage.—The village of Moneglia, which had a population of 1,158 in 1947, is situated about 8 cables east-north-eastward of Punta Moneglia, on the north-eastern shore of a small bay. The church of Santa Croce, which has a slender and prominent belfry, stands near the south-eastern end of the village and there are two smaller belfries near the north-western end. The railway crosses a beach in front of the village on a high embankment which has a viaduct with arches at either end. The ruined Fortino Villafranca is situated at the north-western end of the embankment and at the south-eastern end is Torre Monteleone, a square battlemented tower. In the background, the rounded Monte Pu, 3,284 feet (1,001^m0) high, situated about 4 miles northward of the village, may be identified by its light-coloured and bare summit rising above densely wooded slopes. *See view facing page 258.*

Scoglio Pietra Stella, a rocky patch awash in places, lies about one cable offshore on the alignment of Santa Croce belfry and the central arch of the eastern viaduct.

There are depths of about 3 fathoms (5^m5) about one cable offshore and of 5 fathoms (9^m1) a quarter of a mile offshore. Vessels with local knowledge may obtain anchorage in depths of 4 fathoms (7^m3), sand, with the smaller belfry in the western part of the village in line with a chapel standing among trees on a hill north-eastward of it. Small vessels can find some shelter from south-westerly winds under the lee of Punta Moneglia.

Torre Monteleone to Punta Levante.—Anchorage.—From Torre Monteleone (*Lat. 44° 14' N., Long. 9° 30' E.*), the coast trends south-eastward for about 1½ miles to the mouth of Torrente Deiva. The village of Deiva, which had a population of 476 in 1947, is situated on the north-western side of the river valley about half a mile above the mouth, and a belfry in the village is plainly visible from seaward immediately the valley is open. A stone railway viaduct with seven arches crosses the mouth of Torrente Deiva, and close north-westward of the viaduct is a group of houses and a railway station.

The village of Lemeglio, containing a church and belfry, painted in black and white horizontal bands, is situated at an elevation of 656 feet (199^m9), about half a mile south-eastward of Torre Monteleone and may be readily identified by vessels coasting.

Chart 3907.

Punta Deiva is situated about one mile east-south-eastward of the mouth of Torrente Deiva. Secca dell'Oratorio, a rocky bank with a depth of 8 feet (0^m9) over it, fringes the coast for about a quarter of a mile eastward of Punta Deiva, extending about half a cable offshore.

There are numerous villages on the hills which back the coast between Punta Deiva and Punta di Monte Grosso, about 1½ miles south-eastward. Framura, Setta, Ravecca and Anzo are four villages disposed at almost equal distances apart in a line running northward and southward. Framura, the northernmost and highest, is situated about one mile east-north-eastward of Punta Deiva, and Anzo, the southernmost and lowest, lies about half a mile southward of Framura and about 1½ miles westward of Monte Grumo, *see view facing page 258.* A dark, square tower, surmounted by a small circular turret with

Chart 3907.

a clock, stands at an elevation of 948 feet (288^m9) in Framura and there are similar towers in Setta and Anzo, though the tower in the last-named village is without a circular turret. The railway station of Framura, an isolated, yellow two-storeyed building, is situated on the coast about 9 cables east-south-eastward of Punta Deiva and is a good landmark.

Scoglio Ciamia, a bare, rugged and rocky islet, 52 feet (15^m8) high, lies close inshore about half a cable southward of Framura railway station; it is difficult to distinguish even from a short distance, being of the same reddish colour as the coast behind it.

Reggimonti, a village about one mile east-south-eastward of Anzo, standing at an elevation of 1,181 feet (360^m0), and Montaretto, another village about 1½ cables farther southward, standing at an elevation of 950 feet (292^m0), are both situated on a ridge about half a mile inland, and may be readily identified from seaward; there is a church, painted red, in Reggimonti village.

Monte Pastorelli, 489 feet (149^m0) high, about 6 cables southward of Montaretto, is the summit of a rounded headland which terminates westward in Punta di Monte Grosso, and southward in Punta della Madonna; the latter point is bare, rocky and surmounted by a small chapel with an arched porch.

Between Punta della Madonna and Punta Levanto, the western extremity of Monte Guardia, 643 feet (196^m0) high, about half a mile east-south-eastward, is a small bay at the head of which and between two streams is the village of Bonassola. A high railway embankment crosses the beach in front of the village, and rising above its western end may be seen the belfry of Bonassola church, and a little farther eastward, an ancient fort, surmounted by a clock tower, facing seaward. About half a mile northward of Bonassola is the village of San Giorgio (*Lat. 44° 11' N., Long. 9° 35' E.*), with a church with a red belfry close below it, at an elevation of 538 feet (164^m0).

There are depths of 3 fathoms (5^m5) about 75 yards (68^m2) offshore, and of 5 fathoms (9^m1) about 1½ cables offshore. A moderately steep gravel beach fronts Bonassola village but there is a small sandy beach at the north-north-western corner of the bay where boats may be hauled up in bad weather.

Vessels with local knowledge may obtain anchorage in the northern part of the bay, in depths of from 5½ to 6 fathoms (10^m1 to 11^m0), good holding ground, with San Giorgio church bearing about 013° and in line with the railway bridge across the western stream. In good weather, vessels may anchor closer inshore, in depths of 4½ fathoms (8^m2).

During moderate south-easterly winds, small vessels can obtain some shelter close under the south-eastern shore of the bay, in depths of about 5½ fathoms (10^m1).

Levanto.—Dangers.—Anchorage.—The ancient town of Levanto, which in 1947 had a population of 2,948, lies at the head of a bay entered between Punta Levanto and Punta Picetto, about 1½ miles south-eastward. The town is fronted by a narrow sandy beach and is backed by hills in the form of an amphitheatre. A short distance inland, on the slope of a hill at the north-western side of the town, stands the small chapel of Madonna della Neve at an elevation of 207 feet (63^m1). Other landmarks which are prominent from seaward,

Charts 157, 1780, 2158a, 449.

Chart 3907.

are :—Casa Olivieri, a light-coloured building with a square tower, situated near the north-western end of the beach, close south-eastward of Madonna della Neve ; the railway station, a reddish isolated building with a light-coloured water tank about 50 feet (15^m2) in height, at its north-western end, situated about 2 cables south-south-eastward of Madonna della Neve ; a white belfry in Legnaro village, situated at an elevation of 604 feet (183^m1) on a hill about 1½ miles east-north-eastward of the town ; La Torre, a grey crenellated, polygonal building, situated on a steep rocky eminence near the south-eastern end of the beach ; and a two-storeyed, orange-coloured house surmounting a dark rocky point which projects north-westward from the southern extremity of the beach. *See view facing page 259.*

Scoglio Galera, a small low rock about half a cable offshore, is the outermost of a group of rocks fringing the coast about three-quarters of a mile east-south-eastward of Punta Levante.

Secca della Peria, a rocky shoal with a least depth of 3 feet (0^m9) over it, lies about 3 cables offshore and about 6½ cables south-eastward of Punta Levante ; there are depths of from 5½ to 9 fathoms (10^m1 to 16^m5) between the shoal and the coast.

There are depths of 3 fathoms (5^m5) about one cable offshore and of 5 fathoms (9^m1) about a quarter of a mile offshore. Vessels with local knowledge can anchor anywhere off the town avoiding Secca della Peria. Small vessels can find temporary anchorage in line with the dark rocky point ; there are some landing steps on the inner side of this point, but it must be approached with caution as the bottom is rocky and the depths irregular in its vicinity. In 1947, it was reported that landing here was only possible in a small boat, even in a flat calm.

Directions.—Caution.—To pass northward of Secca della Peria (*Lat. 44° 10' N., Long. 9° 36' E.*), vessels should keep the belfry at Legnaro in line with the southern corner of Casa Olivieri.

To pass southward of the shoal, vessels should keep Legnaro belfry open southward of the south-eastern extremity of the railway station at Levante.

In 1928, it was reported that great care must be exercised not to confuse Legnaro belfry with another more prominent belfry farther north-eastward and higher up the hill, which would then lead a vessel too close to Secca della Peria. Legnaro belfry stands at the northern end of Legnaro village, and, when seen from westward, the houses of the village form a horizontal line stretching southward from the hillside along the hillside.

Coast. — Punta Picetto to Punta del Mesco.—Signal station.—Between Punta Picetto and Punta del Mesco, about 2 miles south-eastward, the coast is high and steep. Monte Vè or Focone rises to an elevation of 1,621 feet (494^m1) close to the coast about 8 cables east-south-eastward of Punta Picetto.

Punta del Mesco is covered with thick vegetation and is faced with bare and rugged cliffs. It may be identified by the dark ruins of the convent of Sant' Antonio which are situated at an elevation of 1,020 feet (310^m9) about 3 cables northward of the extremity of the point, and by the signal station close to the ruins. Scoglio Gagiato, a rocky islet, lies close off the western side of the point.

Punta del Mesco signal station, consisting of a white building with a flagstaff, is situated close southward of the ruins of the convent of Sant' Antonio.

Charts 157, 1780, 2158a, 449.

Chart 3907.

Stone from local quarries is loaded at several points on this part of the coast, especially in the vicinity of Punta La Gatta, about $8\frac{1}{2}$ cables north-westward of Punta del Mesco.

- 5 **Le Cinque Terre.—Anchorage.**—From Punta del Mesco the coast trends north-eastward for about one mile to Monterosso al Mare, and thence about 5 miles south-eastward to Capo di Montenegro. This district is known as Le Cinque Terre and is noted for its vine production; it includes the villages of Monterosso al Mare, Vernazza, 10 Corniglia, Manarola and Riomaggiore, *see* view facing this page. Large quantities of sandstone and pine logs, from the local quarries and woods, are loaded into small coasting vessels off Monterosso al Mare.
- Between Punta del Mesco and Punta Corone, a rocky point surmounted by a small white pillar about $1\frac{1}{4}$ miles east-north-eastward, 15 the coast forms a bight at the head of which is a wide sandy beach divided into two parts by a rocky spur. On this spur, a large, square tower with a dwelling attached; a large, whitish convent; an old circular tower; and a cemetery, are all prominent. The village of Monterosso al Mare, which had a population of 1,530 in 1947, is situated 20 close within the eastern part of the beach. On the western part is the hamlet of Fegina which contains some distinctive buildings. On a small rocky spur at the western end of the beach is a white villa surmounted by a small tower, and rising from a wood immediately in rear of the villa is a yellowish square crenellated tower.
- 25 There is anchorage off the western part of the beach, in depths of 11 fathoms (20^m1). In fine weather landing may be effected on the beach, the eastern part being the more sheltered. With south-westerly winds, the best place for landing is close to the quarries north-north-eastward of Punta del Mesco. At times when the local sandstone and 30 timber traffic is very active, mooring buoys and pontoons may be moored close off the beach.

The village of Vernazza, which in 1947 had a population of 1,037, is situated on a small rocky point which shelters a cove north-eastward of it, situated about 11 cables east-south-eastward of Punta Corone 35 (*Lat. $44^\circ 09' N.$, Long. $9^\circ 40' E.$*). It may be identified by two round towers standing close together on the rocky point; the eastern tower is dark in colour and the western is in ruins. A church with an octagonal belfry surmounted by a cupola is situated close northward of the western tower, and about 6 cables farther east-north-eastward the 40 white church and belfry of San Bernardino may be seen at an elevation of 1,118 feet (340^m8). The cove has depths of about 2 fathoms (3^m7) to within a short distance of its head. Landing can be effected at a landing place close under the western tower.

Between Vernazza and Punta del Luogo, about $1\frac{1}{2}$ miles south-east- 45 ward, the railway runs close to the coast and at two places is supported by prominent stone embankments. Punta del Luogo is the extremity of a promontory, 315 feet (96^m0) high, with steep and rugged sides, on the top of which lies the village of Corniglia, which, in 1947, had a population of 610. Between Punta del Luogo and Punta San Pietro, 50 about one cable north-north-westward, is a small inlet which may be identified by a pointed rock; there is a steep beach at its head where landing may be effected and boats are hauled up.

Between Punta del Luogo and Punta Buonfiglio, about $1\frac{1}{4}$ miles south-eastward, the coast forms a slight bight on the northern shore of

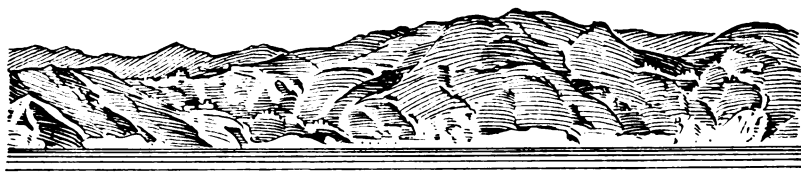


Monte Moneglia.

*Monte Pu, bearing 009°,
distant 8·5 miles.
Moneglia.*

Moneglia from southward.

(Original dated 1921.)



*Framura; Ravecca.
bearing 044°, distant 5 miles.
Anzo.*

Monte Grumo.

Framura from south-westward.

(Original dated 1921.)



Levanto.

Monte Ve.

S. Antonio.

*Madonna di
Montenegro.*

*Isolotto Tino,
bearing 116°,
distant 17·5 miles.*

Isolotto Tino from west-north-westward.

(Original dated 1921.)



*Punta del
Mesco,
bearing 340°,
distant 7 miles.*

*Monterosso al Mare.
Vernazza.*

Corniglia.

*Madonna di
Montenegro
Riomaggiore.*

Punta del Mesco from southward.

(Original dated 1921.)



Scoglio Feraie.

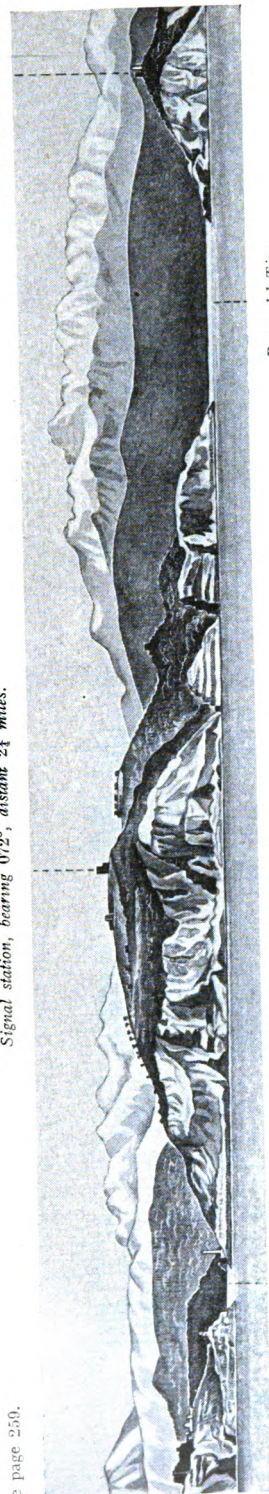
*Punta della
Castellana.*

Isola Palmaria.

*Isolotto Tino,
bearing 088°,
distant 6·5 miles.*

Isolotto Tino from westward.

(Original dated 1921.)



Passo del Tino.

Isola Palmaria.

Isola Palmaria and Isolotto del Tino from westward.

(Original dated 1877.)

Isola Palmaria signal station.



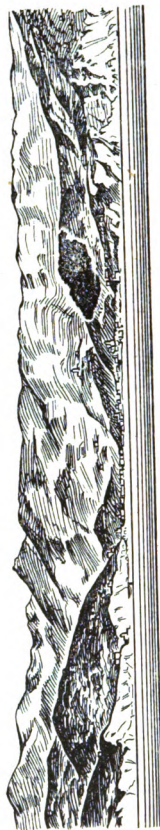
Forle S. Maria.

Torre Scuola.

South-western side of Golfo di La Spezia from eastward.

(Original dated 1877.)

Legnaro belfry.



Madonna della Neve.

La Torre.

Levanto church,
bearing 069°,
distant 2 miles.

Levanto from west-south-westward

(Original dated prior to 1947.)

Chart 3907.

which, about 4 cables eastward of Punta Luogo, is Corniglia railway station; the station is situated between the mouth of a rapid torrent and a stone embankment with many arches which supports the railway. The village of Manarola, which had a population of 883 in 1947, is situated on a rocky point about one cable south-south-eastward of Punta Buonfiglio. 5

Scoglio Grigne, a rock which is difficult to distinguish, lies close inshore about $3\frac{1}{2}$ cables south-eastward of Punta Buonfiglio.

The small town of Riomaggiore, which in 1947 had a population of 10 2,147, is situated at the mouth of a narrow valley of the same name about three-quarters of a mile south-eastward of Punta Buonfiglio and about 4 cables northward of Capo di Montenegro; the sides of the valley of Riomaggiore are covered in vines planted in terraces. In calm weather, landing can be effected at the head of a small cove 15 abreast the town, close north-westward of the valley's mouth.

Capo di Montenegro may be easily identified by the white chapel of Madonna di Montenegro with a belfry and cupola, which is situated about 4 cables north-eastward of the extremity of the cape at an elevation of 1,115 feet (339^m8). See view facing page 258. 20

Capo di Montenegro to Punta San Pietro.—Seno di Cannetto, a small cove entered between Punta del Cavo, about half a mile eastward of Capo di Montenegro, and Punta Castagna, about 4 cables farther south-eastward, has a tall chimney at its head. Landing can be effected on the northern side of the cove at some steps cut in the 25 rock under arches which support the railway; this landing place is suitable for small boats only and should be approached with caution.

Scoglio Grimaldo, a group of rocks one of which is above-water, lies about three-quarters of a cable south-westward of Punta Merlino, a 30 point about $1\frac{1}{2}$ miles east-south-eastward of Capo di Montenegro.

Scoglio Feraie (*Lat. 44° 04' N., Long. 9° 47' E.*), a conical rock with a white cross on its summit and a reddish square pillar at its foot, lies about $1\frac{1}{2}$ cables offshore, about 8 cables south-eastward of Punta Merlino and is connected with the coast by a ridge of rocks; it is 35 darker than the coast behind it and stands out plainly when seen from north-westward or south-eastward.

Campiglia, a village in which is a church with a slender grey square belfry, shows up prominently on a flat ridge, 1,316 feet (401^m0) high, about $6\frac{1}{2}$ cables east-north-eastward of Scoglio Feraie. 40

Charts 155, 3907.

Punta del Persico, situated about one mile east-south-eastward of Scoglio Feraie, and close westward of a prominent reddish patch on the steep coast, is itself reddish in colour; about half-way up the hill behind the point is a light-coloured villa with a crenellated tower 45 which is prominent. Punta della Castellana, a peak 1,674 feet (510^m2) high, surmounted by a fort, is situated about three-quarters of a mile eastward of Punta del Persico and about one mile east-south-eastward of Campiglia. Monte Muzzerone, 1,047 feet (319^m1) high, rises above the steep rocky coast about 7 cables farther south-eastward. 50

Between Punta del Persico and Punta San Pietro, about $1\frac{1}{2}$ miles south-eastward, the coast rises nearly vertically to a considerable height. Punta San Pietro is a rocky point with an old church on it and the ruins of a large square fort on higher ground behind it.

Charts 3907, 157, 1780, 2158a, 449.

Chart 155.

Isola Palmaria.—Signal station.—Isola Palmaria lies south-eastward of Punta San Pietro, from which it is separated by Passaggio di Portovenere (Little Passage), which is about half a cable wide at its narrowest part. The coasts of the island are generally rocky and are particularly high and steep on its western side, where a number of caves and grottoes may be seen. The rock on this island appears to be formed of wide parallel strata, alternately light and dark-coloured. There is a wind pump on Capo dell' Isola, the southern extremity of the island, situated about one mile south-eastward of Punta San Pietro, and about $1\frac{1}{4}$ cables north-westward of this cape is a beacon. See view facing page 259.

A signal station, consisting of a building painted in black and white chequers, with a lattice mast close to it, stands at an elevation of 669 feet (203^m9) on the summit of the island, about half a mile north-north-westward of Capo dell' Isola. Storm signals are displayed by day and at night, see page 11. Vessels entering or leaving Golfo de La Spezia by day or at night must make their numbers to the station.

Passaggio di Portovenere.—Passaggio di Portovenere, the narrow channel between the north-western part of Isola Palmaria and the mainland, is navigable only by small vessels of a draught not exceeding 8 feet (2^m4), owing to a shallow bar which extends across the eastern part of the passage.

Overhead high-tension cables cross the passage from Punta San Pietro to Isola Palmaria, at a least elevation of 98 $\frac{1}{2}$ feet (30^m0). Anchorage is prohibited in Passaggio di Portovenere.

Isola del Tino.—Light.—Isola del Tino lies with Punta Bianca, its north-western extremity, about $2\frac{1}{4}$ cables southward of Capo dell' Isola. Its eastern side is covered with dark trees and its western side is composed of light-coloured, perpendicular cliffs. There is an iron landing pier on the north-eastern side of the island; a yellow masonry pillar, surmounted by a staff, stands close southward of the pier, and a white square pillar stands on Punta Bianca (Lat. 44° 02' N., Long. 9° 51' E.). See views facing pages 258 and 259.

A light is exhibited, at an elevation of 386 feet (117^m6), from a circular tower on a red three-storeyed building, 80 feet (24^m4) in height, situated on the summit of Isola del Tino. Close to the light-structure is an old light-tower which is a similar, but lower, structure.

Tinetto, a rock which resembles Isola del Tino in shape, is connected with the latter by a ridge of rocks, some of which are above-water; it lies about half a cable south-westward of the southern extremity of Isola del Tino.

A rocky spit extends about one cable southward of Tinetto with an above-water rock in the middle, and depths of 10 feet (3^m0) near its extremity.

Landing by unauthorised persons on Isola del Tino or Tinetto is prohibited.

The passage between Isola del Tino and Isola Palmaria is about a quarter of a mile wide with depths of about 16 fathoms (29^m3) in the fairway. It is easily navigated, but after strong winds the current in the passage is appreciable.

Submarine cables.—Prohibited anchorage.—Two submarine cables cross the passage between the landing pier on the north-eastern coast of Isola del Tino and a position on the eastern coast of Isola

Chart 155.

Palmaria, about $4\frac{1}{2}$ cables north-north-eastward of Capo del' Isola. Anchoring is prohibited in the vicinity of these cables and in the passage between the two islands.

Spoil ground.—A spoil ground is situated in a circular area of about half a cable radius, the centre of which lies about $2\frac{1}{2}$ cables south-south-westward of Isola del Tino light-structure. 5

GOLFO DI LA SPEZIA.—General remarks.—Golfo di La Spezia is entered between Isola del Tino and Punta Corvo, about 5 miles eastward, and the gulf extends about $5\frac{1}{2}$ miles north-westward 10 to the port and town of La Spezia at its head. The gulf is spacious, safe and convenient, and is surrounded by picturesque mountains belonging to two secondary branches of the Appenines. Its shores are much indented and several of the coves afford good shelter. See view facing page 259. 15

Rada di La Spezia, the inner part of the gulf, is protected by a breakwater about 12 cables long, which extends across the gulf about 3 miles within the entrance, leaving a narrow channel at either end. The surface of this breakwater is awash, with raised ends on which there are huts and light-structures, and near its centre are four framework masts. 20

Vessels approaching from southward may readily identify the signal station on Isola Palmaria and the light-towers on Isola del Tino, both on the western side of the entrance to the gulf, see view facing page 259. On the eastern side, Monte Sagro, 5,738 feet ($1,748^m9$) high, Monte Altissimo, 5,213 feet ($1,588^m9$) high, and Monte Pania della Croce, 25 6,100 feet ($1,859^m3$) high, see chart 157, situated, respectively, about $14\frac{1}{2}$ miles east-north-eastward, $16\frac{1}{2}$ miles eastward, and $20\frac{1}{2}$ miles eastward, of Isola del Tino, may be distinguished by the white patches on them.

Currents.—The current in the gulf is influenced considerably by 30 the prevailing winds; it normally sets northward along the eastern shore and southward along the western shore.

Pilotage.—Pilotage is compulsory for all merchant vessels exceeding 100 tons gross, both for entering and leaving Rada di La Spezia. Vessels arriving should embark the pilot in the vicinity of Torre 35 Scuola, see below.

OUTER PART OF GULF. — Western side. — Light. — Buoys.—**Prohibited anchorage.**—Isola del Tino and the western side of Isola Palmaria are described on page 260.

From Capo dell' Isola (*Lat. $44^\circ 02' N.$, Long. $9^\circ 51' E.$*), the eastern 40 coast of Isola Palmaria trends about $6\frac{1}{2}$ cables north-north-eastward to Punta della Mariella, and thence northward for about half a mile to Punta della Scuola, the north-eastern extremity of the island. A rocky bank, on which the depths are 3 fathoms (5^m5) and less, fringes Punta della Mariella and extends about $3\frac{1}{2}$ cables south-south-westward and 45 as much as $1\frac{1}{2}$ cables offshore; a 5-foot (1^m5) patch lies on this bank about one cable southward of the point.

Punta della Scuola is comparatively low and is fringed by rocks extending about half a cable north-eastward, one of which, large and flat, is surmounted by a small pillar. Torre Scuola, about $1\frac{1}{2}$ cables 50 eastward of the point, is a square tower, the southern side of which is partly demolished, surmounted by a prominent triangulation pillar.

Charts 3907, 157, 1780, 2058a.

Chart 155.

Rocks extend about half a cable westward and south-westward of the tower, leaving a narrow passage between them and the rocks fringing Punta della Scuola, with depths of 6 fathoms (11^m0) in the fairway.

- 5 A 5½-fathom (10^m5) patch lies about 1¼ cables south-westward, and a 5-fathom (9^m1) patch lies about 1½ cables northward, of Torre Scuola.

A light is exhibited, at an elevation of 52 feet (15^m5), from a white iron framework structure, 7 feet (2^m1) in height, situated on Torre
10 Scuola.

A de-magnetisation range for large vessels, the boundaries of which are marked by three buoys, is situated off the eastern side of Isola Palmaria between about half a mile and one mile southward of Torre Scuola.

- 15 Anchorage is prohibited off the eastern coast of Isola Palmaria, westward of the meridian of Torre Scuola.

Baia di Portovenere. — **Light-buoy.** — Baia di Portovenere lies between the northern coast of Isola Palmaria and the southern side of the peninsula which forms the western side of Golfo di La Spezia.

- 20 It is entered between Torre Scuola and Punta della Castagna, about 6½ cables north-north-westward, and it affords anchorage sheltered from westward, the south-westerly sea entering through Passaggio di Portovenere being partly checked by the bar across the eastern end of that passage.

- 25 A light-buoy painted white, surmounted by a white pyramidal topmark, and exhibiting a *white flashing* light, giving a *short flash every five seconds*, is moored off the entrance to the bay, about 3¼ cables north-north-eastward of Torre Scuola (*Lat. 44° 03' N., Long. 9° 52' E.*).

- A large yellow building stands close westward of Punta della Scuola,
30 and about half a mile farther westward is Seno del Terrizzo, a bay sheltered from westward by a shallow sandy and rocky spit, which extends about 1¼ cables northward from the western entrance point of the bay. There is a landing pier in the middle of the head of Seno del Terrizzo, but landing on Isola Palmaria by unauthorised persons is
35 prohibited.

- Portovenere.** — **Light.** — **Port facilities.** — The town of Portovenere, which in 1947 had a population of 5,592, is situated on the northern shore near the head of the bay, about 2 cables north-north-eastward of Punta San Pietro (page 259). A large yellow square
40 building is prominent on the coast north-eastward of the town and the parochial church, with a belfry and cupola which is also prominent, stands in the higher part of the middle of the town.

- A masonry jetty extends about 100 feet (30^m5) from the shore abreast the middle of the town, and a wooden pier, which is used as a
45 landing place by small local craft plying between Portovenere and La Spezia, projects from the shore abreast the yellow building. South-westerly winds, if strong, raise a heavy sea and render landing impracticable.

- A light is exhibited, at an elevation of 28 feet (8^m5), from a frame-
50 work structure, painted in red and white stripes, 18 feet (5^m5) in height, situated on the head of the jetty.

There is a 5-ton crane on the jetty.

There are several slipways on the northern shore of Baia di Portovenere the largest of which can take vessels of up to 1,000 tons.

Charts 3907, 157, 1780, 2158a, 449.

Chart 155.

Seno della Castagna.—Beacon.—Seno della Castagna is entered between Punta della Castagna (*Lat. 44° 04' N., Long. 9° 51' E.*) and Punta Santa Maria, about 3 cables northward. It affords good anchorage but unauthorised vessels are prohibited from anchoring or stopping in the cove and its approaches, and should give Punta della Castagna a berth of $1\frac{1}{2}$ cables. 5

A masonry beacon, painted in black and white horizontal bands, 20 feet (6^m1) in height, stands about one cable southward of Punta della Castagna. 10

Torpedo firing range.—A torpedo firing range extends about 8·6 miles in a 109° direction from Punta della Castagna. The range is normally marked by fifteen pairs of buoys, moored about $5\frac{1}{2}$ cables apart. When torpedo firing practice is taking place, a red flag is displayed on a framework mast situated at the firing point on Punta della Castagna. In 1947, torpedo firing practice had been suspended and the buoys marking the range had been withdrawn. 15

Eastern side of gulf.—Punta Corvo to Punta Santa Teresa.—Punta Corvo, the eastern entrance point of Golfo di La Spezia, is the southern extremity of a rocky spur of Monte Rocchetta, 1,362 feet (415^m1) high, situated about $2\frac{1}{2}$ miles north-westward. The point is fringed by some rocks, on one of which, named Corvaccino, stands a small white triangulation pillar. From Punta Corvo, the coast trends north-westward for about 2 miles to a rocky point on which is the village of Telaro. On this stretch of coast, the village of Monte Marcello, in which is a reddish belfry, situated at an elevation of 886 feet (270^m0), about half a mile northward of Punta Corvo, and a two-storeyed, light-coloured building, situated on the summit of Monte Murlo, 1,189 feet (360^m9) high, about 7 cables north-westward of Monte Marcello, may be readily identified. 20 25 30

Between Telaro and Punta di Maralunga, about $1\frac{1}{2}$ miles north-westward, the coast is indented by four small bays; the first or south-easternmost is almost entirely encumbered with shoals, and numerous rocks lie on the western side of the entrance; the second is very narrow, with foul ground at its head; and the two north-western bays have moderate depths close inshore. About three-quarters of a mile eastward of Punta di Maralunga and midway along this stretch, the village of Serra will be seen at an elevation of about 600 feet (182^m9). 35

Seno di Maralunga is entered between Punta di Maralunga and a point on which is a large and prominent castle, surmounted by an hexagonal tower, about a quarter of a mile northward. From this latter point, the coast sweeps in a wide curve to Punta Galera, about 9 cables west-north-westward, forming Seno di Lerici. Between Punta Galera and Punta Santa Teresa, about 3 cables westward, is a shallow cove named Cala Chiappara, which is open southward. 40 45

Seno di Lerici.—Light.—Seno di Lerici extends about half a mile north-eastward from its entrance between the point on which is the large castle and Punta Galera. The town of Lerici is situated on the south-eastern shore of the bay, close north-north-eastward of the castle. The village of San Terenzo lies on the northern shore of the bay, about 4 cables east-north-eastward of Punta Galera. An old castle stands on a peninsula which projects a short distance southward from the shore abreast San Terenzo, and a wooden pier extends from the eastern side of the peninsula. There are depths of 10 feet (3^m0) alongside the 50

Charts 3907, 157, 1780, 2158a, 449.

Chart 155.

eastern side of this pier but the western side is shallow and rocky. Villa Fabbricotti, a building with a sloping roof surmounted by a square tower, which is prominent, stands on a hill about 3 cables north-

5 eastward of San Terenzo (*Lat. 44° 05' N., Long. 9° 54' E.*).

A quayed mole, about 400 feet (121^m9) long, projects north-westward from the point on which is the large castle, and a wooden pier projects westward from the shore about 2 cables east-north-eastward of the mole head; there is a least depth of 10 feet (3^m0) alongside the outer

10 60 feet (18^m3) of the pier. The shore of the bay between the mole and the pier is faced with quays.

A light is exhibited, at an elevation of 26 feet (7^m9), from an iron structure, painted in black and white stripes, 16 feet (4^m9) in height, situated on the head of the mole.

15 The town of Lerici, which had a population of 11,448 in 1947, is a popular bathing resort. The Harbour office, a yellow building with landing steps in front of it, is situated close northward of the castle.

South-westerly winds if strong raise a considerable sea in Seno di Lerici, especially at the quay abreast the foot of the castle. Small

20 vessels berth with their sterns secured to the mole.

Measured distance.—A measured distance for testing speed is situated about 3 cables south-eastward of, and parallel with, the breakwater. The running marks are the southern corner of the old castle close southward of San Terenzo in line with the northern corner

25 of the tower surmounting Villa Fabbricotti, bearing 055° 53', and this alignment passes through the belfry of Portovenere parochial church. The western and eastern limits of the measured distance are defined by the alignment of two pairs of wooden staffs, about 20 feet (6^m1) in height, fixed on small, square masonry pillars, and situated near the

30 western and eastern extremities of the breakwater. The measured distance between these marks is 7,141 feet (2,176^m6).

RADA DI LA SPEZIA.—General remarks.—Buoys.—Rada di La Spezia is the inner part of Golfo di La Spezia between the breakwater and the head of the gulf. The city of La Spezia is situated on

35 the western part of the head of the gulf and is fronted by Arsenale Marina Militaire, the naval dockyard, and Porto Mercantile, the commercial harbour.

There are general depths of from 5 to 7 fathoms (9^m1 to 12^m8) in the outer part of Rada di La Spezia and of from 3½ to 6 fathoms (6^m4

40 to 11^m0) in the inner part lying north-eastward of Darsena Duca degli Abruzzi, the outer basin leading to the naval dockyard.

There are numerous mooring buoys in Rada di La Spezia, most of which are marked by a letter and number and are reserved for men-of-war; merchant vessels must not secure to one of these buoys without

45 permission from the Captain of the Port.

A buoy at which large vessels adjust compasses is moored about 4 cables north-north-eastward of the western extremity of the breakwater; it is surrounded at a distance of about 1½ cables by six other buoys.

50 **Entrances. — Buoyage. — Lights. — Fog signals.** — Passo di Ponente, the western entrance to Rada di La Spezia, is about 2½ cables wide between Punta Santa Maria and the western end of the breakwater, with depths of about 7 fathoms (12^m8); Passo di Levante, the

Chart 155.

eastern entrance, is about $1\frac{1}{2}$ cables wide between the eastern extremity of the breakwater and Punta Santa Teresa, with depths of about 6 fathoms (11^m0). In 1951 Passo di Ponente was obstructed by wrecks and the work of removing them was in progress.

A narrow passage, about half a cable wide, has been made in Passo di Ponente (*Lat.* 44° 04' N., *Long.* 9° 51' E.). It is marked on its western side by two red conical buoys and by a light-buoy exhibiting a *red flashing* light every four seconds and on its eastern side by a light-buoy exhibiting a *green flashing* light every four seconds.

A light is exhibited, at an elevation of 33 feet (10^m1), from a white masonry structure with black stripes, 11 feet (3^m4) in height, situated on Punta Santa Teresa.

A light is exhibited, at an elevation of 33 feet (10^m1), from a red masonry tower with white stripes, 23 feet (7^m0) in height, situated on the north-eastern extremity of the breakwater.

A fog signal is sounded on Punta Santa Maria and on Punta Santa Teresa.

Western side of roadstead. — Danger. — Buoyage. — Seno del Varignano is entered between Punta Santa Maria and Punta del Varignano, about $2\frac{1}{2}$ cables west-north-westward; its inner part is shoal and the inlet is nearly always encumbered by mooring buoys. There are four large and prominent grey-green buildings on Punta del Varignano with several signal masts in the north-eastern part. A rocky spit extends about half a cable north-eastward of Punta del Varignano; a light-buoy, painted white and exhibiting two *red fixed* lights, is moored on the extremity of the spit.

Seno delle Grazie is entered between Punta del Varignano and Punta Pezzino, about $3\frac{1}{2}$ cables north-north-westward. It affords one of the safest and most convenient anchorages in the gulf and is much frequented by merchant vessels in winter. The south-eastern shore is quayed for the greater part of its length, the quays being reserved for naval vessels, and merchant vessels are prohibited from anchoring within a distance of about half a cable from them. At the head of the inlet is the village of Le Grazie, and in front of the village is a wooden pier. There are several small piers and quays on the western and north-western shores of the inlet, between Le Grazie village and a point about $2\frac{1}{2}$ cables south-south-westward of Punta Pezzino, and a buoy is moored at about the middle of the inlet. Oyster beds extend along the northern side of the inlet between a quarter and three-quarters of a cable offshore.

A $5\frac{1}{2}$ -fathom (10^m1) patch lies about $1\frac{1}{2}$ cables eastward of Punta Pezzino.

Repairs to small craft can be undertaken at Le Grazie where there is a slipway of a capacity up to 300 tons.

Two lines of seaplane moorings, consisting of floats joined by a cable, are moored in a north-westerly and south-easterly direction, about $3\frac{1}{2}$ cables north-eastward of Punta Pezzino.

Seno di Panigaglia lies between Punta Pezzino and Punta Fezzano, about $5\frac{1}{2}$ cables west-north-westward; it is entirely given over to oyster beds, and vessels should keep at least half a cable north-eastward of a line joining the entrance points. There are usually numerous fishing boats off Punta Fezzano.

Seno di Fezzano is entered between Punta Fezzano and Punta di

Charts 3907, 157, 1780, 2158a, 449.

Chart 155.

Cadimare, about $2\frac{3}{4}$ cables north-westward; its shores are almost entirely lined with quays and there is a wooden pier in front of the village of Fezzano, situated on the western shore of the inlet. A dark-
 5 coloured belfry in the village is prominent.

A buoy, at which small craft can adjust compasses, is moored in Seno di Fezzano, about one cable south-eastward of Punta di Cadimare (*Lat.* $44^{\circ} 05' N.$, *Long.* $9^{\circ} 50' E.$).

Seno di Cadimare is entered between Punta di Cadimare and the
 10 southern mole of Darsena Duca degli Abruzzi, the outer harbour of Arsenale Marina Militaire. It is a small and safe inlet, with a shipyard in which there is a slipway of 500 tons capacity at its head. An isolated church with a grey pyramidal roof, rises among the olive trees on a hill, 906 feet (276^m) high, about a quarter of a mile west-south-
 15 westward of Punta di Cadimare.

Eastern side of roadstead.—Lights.—Punta Santa Teresa, the eastern entrance point of Rada di La Spezia, has a short mole projecting west-south-westward from it. Punta di Calandrello, close off
 20 which is a rock with a depth of less than 6 feet (1^m 8) over it, lies about one cable north-north-westward of Punta Santa Teresa. A tall and prominent chimney stands on a hill about 3 cables north-north-eastward of Punta di Calandrello.

Seno di Pertusola, a small cove on the northern side of Punta di Calandrello, has some lead foundries, fronted by several small piers,
 25 at its head. Between this cove and Punta San Bartolomeo, about three-quarters of a mile west-north-westward, the coast is backed by a range of picturesque green hills, near the crest of which, at an elevation of 426 feet (129^m 8) and about 8 cables north-north-eastward of Punta di Calandrello, is the village of Pitelli. On the lower slopes of
 30 these hills are dotted the villas of the village of Muggiano and lining the coast are the naval construction works of Odero-Terni-Orlando.

A mole, quayed on its northern side, projects about $1\frac{1}{2}$ cables westward from the shore about $4\frac{1}{2}$ cables north-westward of Punta di Calandrello. A 7-foot (2^m 1) patch lies about 66 feet (20^m 1) north-
 35 north-westward of the head of the mole, and the southern side of the mole is shoal and should not be approached within a distance of about 55 yards (50^m 3). Vessels of a draught of less than 20 feet (6^m 1) can berth alongside the northern side of the mole, and there are depths of from 5 to 16 feet (1^m 5 to 4^m 9) alongside the quays lining the shore
 40 northward of its root.

A light is exhibited, at an elevation of 30 feet (9^m 1), from a concrete post, 20 feet (6^m 1) in height, situated at the head of the mole.

Between Punta San Bartolomeo and Molo dei Pagliari, about three-quarters of a mile north-north-westward, the shore is lined with
 45 shipyards and factories, from which numerous piers project. Punta San Bartolomeo is the extremity of a breakwater which extends about one cable west-south-westward from the shore and affords some protection to the San Bartolomeo shipbuilding yard on its northern side. At the northern end of this yard, about $2\frac{1}{2}$ cables northward of Punta
 50 San Bartolomeo, is a basin entrance, from each side of which a light is exhibited, at an elevation of 20 feet (6^m 1), from an iron post, 16 feet (4^m 9) in height.

Molo dei Pagliari is 410 feet (125^m 0) long and is reserved for naval craft. Close southward of the root of this mole is the factory of the

Charts 3907, 157, 1780, 2158a, 449.

Chart 155.

Pirelli works with two chimneys, of which the higher one forms a prominent landmark.

Two lights, disposed vertically, are exhibited at an elevation of about 26 feet (7^m9), from a concrete column, 20 feet (6^m1) in height, 5 situated on the head of Molo dei Pagliari.

Head of roadstead.—Signal station.—The city of La Spezia lies stretched along the head of the roadstead from about half a mile north-north-westward of Seno di Cadimare for about 1½ miles north-eastward and is fronted by Arsenale Marina Militaire and Porto 10 Mercantile. From the eastern side of Porto Mercantile, the head of the roadstead trends about 6 cables eastward and thence half a mile south-south-eastward to Molo dei Pagliari; there are numerous bathing establishments on the shore of this stretch, and fronting its eastern part to a distance of about 3 cables offshore are extensive 15 oyster beds.

A signal station (*Lat. 44° 07' N., Long. 9° 49' E.*), at which day and night watch is kept, is situated on the north-eastern side of the city of La Spezia, about 1½ miles west-north-westward of the head of Molo dei Pagliari. 20

Seaplane exercise areas.—Regulations.—The following areas are reserved for the exercise of Italian military seaplanes:—

Cadimare airport:—A strip of water 2,100 by 1,000 metres (about 2,297 by 1,094 yards) about 2 cables off the western shore of the roadstead between Punta del Varignano and Punta di Cadimare, and 25 bounded on the south-east by a line joining Punta del Varignano and the head of Molo Odero-Terni-Orlando, and on the north-east by a prolongation of Molo Lagora, the mole forming the north-eastern side of Darsena Duca degli Abruzzi.

Muggiano airport:—The area fronting the eastern shore of the roadstead between Punta di Calandrello and the basin at San Bartolomeo shipyard, up to a distance of 600 metres (about 656 yards) offshore. 30

In certain conditions of weather, the area in the middle of the roadstead between the two above-mentioned airports may be included in the exercise areas. 35

During the period of flying exercises, flag D of the International Code of Signals will be displayed at the appropriate mast in both Muggiano and Cadimare airports, and whilst so displayed the areas defined above are to be kept clear of vessels of any type.

Vessels which for any reason have not been able to get clear of the airport and find themselves in the vicinity of a seaplane alighting or taking off should stop and should await the completion of taking off or alighting, before proceeding to get clear of the airport. 40

During flying exercises vessels are prohibited from approaching within half a cable of the boundaries of the airports. Small craft, 45 leaving Seno di Cadimare and bound for Passo di Ponente, should pass at least half a cable seaward of any seaplane at the moorings off Punta Pezzino; should there be no seaplanes at these moorings, vessels may pass between the lines of moorings.

At night.—The area reserved for night flying is bounded by lines 50 joining the following points:—The light on the eastern entrance point of Darsena Duca degli Abruzzi; a point about 2½ cables 055° from that light; a point about 10½ cables 114° from the same light; the western extremity of the breakwater; the extremity of Punta Santa Maria;

Chart 155.

Punta Pezzino ; Punta di Cadimare ; and the light on the western entrance point of Darsena Duca degli Abruzzi.

When night flying practice is to take place, lights will be exhibited
 5 at sunset from the seaplane slip at Muggiano airport and from Punta della Castellana (page 259). The extinguishing of these lights will indicate the completion of night flying practice. Whilst these lights are exhibited, the night flying area is to be kept clear of vessels of any type and Passo di Ponente is closed.

10 **Prohibited anchorage.**—Anchorage is prohibited in the following areas in Rada di La Spezia :—Within a distance of $5\frac{1}{2}$ cables of Passo di Ponente and Passo di Levante ; within a distance of half a cable of the northern side of the breakwater ; within a distance of half a cable of the shore or the pierheads between Molo Odero-Terni-Orlando and
 15 Molo dei Pagliari ; in Seno del Varignano and Seno della Castagna (Lat. $44^{\circ} 04' N.$, Long. $9^{\circ} 51' E.$) and in all areas reserved as oyster beds.

Directions.—Caution.—All vessels must reduce speed to not more than 6 knots in the passage between Isola Palmaria and Isola del Tino, and must proceed at a moderate speed when entering Rada di La
 20 Spezia.

In normal conditions, vessels should approach the entrances to the roadstead on a bearing of the middle of the fairway until within about a quarter of a mile of the breakwater, when course should be shaped as requisite for entering, keeping to their own starboard hand.

25 At night, in order to avoid the buoys marking the torpedo firing practice range, vessels should pass westward of the light-buoy moored north-north-eastward of Torre Scuola and thence should keep the green light on the eastern entrance point of Darsena Duca degli Abruzzi bearing about 325° , and midway between the lights on Punta Santa
 30 Maria and the western extremity of the breakwater, which leads through Passo di Ponente to the entrance to Darsena Duca degli Abruzzi.

Vessels approaching Passo di Levante at night should keep the middle of the entrance bearing 312° , with the entrance lights on either
 35 side well open. When in the entrance, course should be shaped to keep the light on the head of Molo Garibaldi (page 272) slightly on the starboard bow so as to avoid the mooring buoys and shipping moored off San Bartolomeo.

In 1950, entrance to Rada di La Spezia by Passo di Ponente was
 40 only possible through a narrow channel, marked by light-buoys ; vessels should pass through this narrow channel midway between the light-buoys, on a course of about 349° . Vessels leaving the roadstead have priority over vessels entering.

Darsena Duca degli Abruzzi. — Lights. — Quayage. — Darsena
 45 Duca degli Abruzzi (Outer port) is a basin which gives access to the naval dockyard and is enclosed by three moles. Diga di Cadimare, the southern mole, extends about $4\frac{1}{2}$ cables east-north-eastward from the northern side of Seno di Cadimare ; Molo Lagora, the north-eastern mole, extends about 3 cables south-eastward from a point on the coast
 50 about $8\frac{1}{2}$ cables northward of the root of Diga di Cadimare ; and Diga Est (East breakwater), a detached mole, extends between the heads of Molo Lagore and Diga di Cadimare.

Passo Principale, the main entrance, is about three-quarters of a cable wide between the head of Diga di Cadimare and the southern end

Chart 155.

of Diga Est and has depths of 6 fathoms (11^m0) in it. Passo Secondario, a smaller entrance, about a quarter of a cable wide between the head of Molo Lagora and the northern end of Diga Est, has depths of 4½ fathoms (7^m8) in it.

There are general depths of from 5½ to 7 fathoms (9^m6 to 12^m8) in Darsena Duca degli Abruzzi and there are numerous mooring buoys in its north-eastern part.

Leading lights have been established for Passo Principale. The front light is exhibited, at an elevation of 50 feet (15^m2), from a red and white mast, surmounted by a disc, 25 feet (7^m6) in height, situated on the front part of the roof of Palazzo della Veleria, a sail loft situated at the north-western end of Prima Darsena, about 9 cables north-westward of Passo Principale.

The middle light is exhibited at an elevation of 70 feet (21^m3) from a similar mast situated on the middle of the roof of the sail loft, close north-westward of the front light.

The rear light is exhibited, at an elevation of 157 feet (47^m8) from a pentagonal masonry tower, painted in red and white chequers, 44 feet (13^m4) in height, situated in the village of Pegazzano (*Lat.* 44° 06' N., *Long.* 9° 48' E.), about 5½ cables north-westward of the front light. These lights in line, bearing 306°, lead through Passo Principale.

A light is exhibited, at an elevation of 10 feet (3^m0), from a red iron hut, 7 feet (2^m1) in height, situated on the head of Diga di Cadimare.

A light is exhibited, at an elevation of 18 feet (5^m5), from a black iron hut, 8 feet (2^m4) in height, situated on the southern end of Diga Est.

A light is exhibited, at an elevation of 23 feet (7^m0), from a white iron structure, 16 feet (4^m9) in height, situated on the north-eastern angle of Diga Est.

A light is exhibited, at an elevation of 18 feet (5^m5), from a red iron framework structure, 15 feet (4^m6) in height, situated on the northern end of Diga Est.

A light is exhibited, at an elevation of 18 feet (5^m5), from a black iron framework structure, situated on the head of Molo Lagora.

At the south-western corner of Darsena Duca degli Abruzzi are two small enclosed basins with narrow entrances and depths in them of from 13 to 20 feet (4^m0 to 6^m1).

Molo della Varicella projects about one cable east-north-eastward from a position on the western side of the basin, about 2½ cables north-north-westward of the root of Diga di Cadimare. Both sides of this mole are faced with quays which are fitted for discharging coal. There are depths of from 26 to 30 feet (7^m9 to 9^m1) alongside the quays, except near the root of the mole where the depths alongside are from 20 to 26 feet (6^m1 to 7^m9).

Between Molo della Varicella and Porticciolo di San Vito, about 2 cables north-north-westward, the western side of the basin is faced with a quay with a least depth alongside of 10 feet (3^m0).

Porticciolo di San Vito is the outermost basin of Darsena di San Vito, three small communicating basins which extend about 2½ cables west-south-westward from the entrance on the western side of Darsena Duca degli Abruzzi; there are depths of from 8 to 10 feet (2^m4 to 3^m0) in the basins and in the channels connecting them.

Charts 3907, 157, 1780, 2158a, 449.

Chart 155.

Between the entrance to Porticciolo di San Vito and the north-western corner of Darsena Duca degli Abruzzi is Calata del Guardaporto, a quay reserved for small naval craft which berth there end-on, with their sterns secured to the quay. There are depths of from 13 to 20 feet (4^m0 to 6^m1) at a distance of 10 feet (3^m0) from the face of the quay except at its northern end, where there are depths of from 9 to 10 feet (2^m7 to 3^m0) at a similar distance from the face of the quay.

The northern side of Darsena Duca degli Abruzzi is faced with a quay named Banchina Scali, at which Italian naval torpedo craft usually berth end-on. There are depths of 13, 20 and 25 feet (4^m0, 6^m1 and 7^m6) at distances of 16, 39 and 82 feet (4^m9, 11^m9 and 25^m0), respectively, from the face of the quay.

Naval dockyard.—Basins.—Lights.—Arsenale Marina Militaire, the naval dockyard, comprises two communicating basins, each with an entrance about a quarter of a cable wide. Prima Darsena, the outer basin, has depths of from 33 to 37 feet (10^m1 to 11^m3) in the fairway, and Seconda Darsena, the inner basin, has depths of from 33 to 36 feet (10^m1 to 11^m0) in the middle; there is a least depth of 34 feet (10^m4) in the passage joining the two basins which is crossed by a swing bridge.

The entrance to Prima Darsena lies close north-eastward of the north-western corner of Darsena Duca degli Abruzzi (*Lat.* 44° 06' N., *Long.* 9° 49' E.). A light is exhibited, at an elevation of 34 feet (10^m4), from an iron column, painted in black and white horizontal bands, 38 feet (11^m6) in height, situated on the south-western entrance point of Prima Darsena.

A light is exhibited, at an elevation of 34 feet (10^m4), from an iron column, painted in black and white horizontal bands, 48 feet (14^m6) in height, situated on the north-eastern entrance point of Prima Darsena.

Directions.—Signals.—Caution.—All vessels entering Darsena Duca degli Abruzzi must give way to vessels leaving. Vessels entering must get on the leading line which leads through Passo Principale at a distance of not less than 1½ cables from the entrance, in order to be able to see whether any small vessel is leaving. This leading line also leads through the entrance to Prima Darsena.

To assist vessels in keeping to the middle of the channel, the axis of the passage between Prima Darsena and Seconda Darsena is marked by black and white vertical stripes painted on the sides of buildings, in line with similarly coloured staffs surmounted by discs, situated on the roofs of these buildings.

Before entering Prima Darsena, vessels must ascertain that the "panne," a wooden obstruction which opens and closes the entrance by means of cables, is in the "open" position; it is normally in the open position between 0600 and 2000 hours daily. Vessels should also ascertain what signal is displayed at the mast on the south-western side of the entrance to Prima Darsena.

In order to inform vessels about to enter or leave the dockyard that the passage is clear, the following signals will be displayed at the mast at the south-eastern corner of the sail loft at the head of Prima Darsena, and at the mast on the south-western side of the entrance to that basin:—

Flag B of the International Passage suspended for vessels as a Code of Signals submarine is under way.

Charts 3907, 157, 1780, 2158a, 449.

Chart 155.

Cone, point up Swing bridge open, clear passage for vessels leaving.

Ball Swing bridge open, clear passage for vessels entering.

5

Vessels leaving Seconda Darsena may manœuvre so as to head for the entrance while the bridge is being opened, but they must not move ahead until the cone is displayed.

All vessels must reduce speed to not more than 6 knots in the entrances and inside the basins of the dockyard.

10

The water pressures set up on either side of Prima Darsena, by vessels entering or leaving, are not equal, and vessels must pay great attention to the lateral movement so caused, which, at times, may be considerable.

Porticciolo Lagora.—Porticciolo Lagora, also called Porticciolo Militaire, is a small rectangular basin on the northern side of the root of Molo Lagora and at the entrance to Canale Lagora. It has depths of about 10 feet (3^m0) in the middle and 7 feet (2^m1) alongside the quays, and is entirely reserved for men-of-war's boats. Boats entering must give way to boats leaving Porticciolo Lagora.

20

Porticciolo delle Torpediniere. — **Light.** — **Light-buoy.** — **Landing.**—Porticciolo delle Torpediniere is a rectangular basin on the north-eastern side of Porticciolo Lagora. It is protected from south-eastward by Molo Mirabello, which extends 754 feet (229^m9) north-eastward from the north-eastern side of the entrance to Porticciolo Lagora; there are depths of about 14 feet (4^m3) in the basin, decreasing in the vicinity of the quays. The basin is reserved for the use of Italian naval vessels.

25

A light is exhibited, at an elevation of 26 feet (7^m9), from a cylindrical iron structure, 15 feet (4^m6) in height, situated on the head of Molo Mirabello (*Lat.* 44° 06' N., *Long.* 9° 50' E.).

30

A light-buoy, exhibiting a *red fixed* light, is moored about 75 yards (68^m6) east-north-eastward of the head of Molo Mirabello. It should be left on the port hand by all boats entering or leaving Porticciolo delle Torpediniere.

35

Banchina Revel, the quay which forms the south-western side of the basin, is the principal landing place of the city of La Spezia. The landing place at the quay on the north-western side of the basin may be used by the boats of merchant vessels in the roadstead in addition to men-of-war's boats, but the services of the latter boats must not be obstructed by such use.

40

Between the entrance to Porticciolo delle Torpediniere and the root of Molo Italia, about 3 cables north-eastward, the shore fronting the city is faced by a quay named Calata Morin; near the south-western end of this quay are two small wooden piers which are reserved for vessels engaged in the ferry service, between La Spezia, Lerici, and Portovenere.

45

Porto Mercantile. — **Lights.** — **Quayage.** — **Buoy.** — Porto Mercantile, the commercial harbour, is entered between the head of Molo Italia, situated about 3½ cables east-north-eastward of the head of Molo Mirabello, and the head of a breakwater extension to Molo Garibaldi, about 1½ cables farther east-south-eastward.

50

Molo Italia extends about 2½ cables south-eastward and eastward from a position about 2¾ cables northward of the head of Molo Mira-

Chart 155.

bello, and Molo Garibaldi extends about $2\frac{3}{4}$ cables southward from a position about $4\frac{1}{2}$ cables north-eastward of the root of Molo Italia. A breakwater extends about $1\frac{1}{2}$ cables south-south-westward from the
 5 head of Molo Garibaldi. There are general depths of from 4 to 5 fathoms (7^m3 to 9^m1) in Porto Mercantile.

A light is exhibited, at an elevation of 26 feet (7^m9), from a tower, painted in red and white horizontal bands, 25 feet (7^m6) in height, situated on the head of Molo Italia.

- 10 A light is exhibited, at an elevation of 30 feet (9^m1), from an iron structure on a square iron hut, painted in black and white, 15 feet (4^m6) in height, situated on the head of the breakwater extending from Molo Garibaldi.

- Two lights, disposed vertically, for the use of aircraft, are exhibited
 15 from a radio mast about 200 feet (61^m0) in height, situated in the city, about 4 cables north-westward of the head of Molo Italia.

- The quayage in Porto Mercantile consists of : The western side of Molo Garibaldi and the inner part of the western side of the breakwater ; Calata A. Malaspina (Centrale), at the head of the harbour ;
 20 and Calata G.B. Paita, which forms the inner part of the western side of the harbour. These quays were all extensively damaged during the recent hostilities, but in 1950 all war damage was reported repaired.

- Molo Garibaldi is 1,640 feet (499^m9) long, with depths alongside of from 21 to 30 feet (6^m4 to 9^m1). It is chiefly used for the discharge of
 25 coal and fuel oil and the berths are connected with oil tanks by pipe line. The quayed inner part of the breakwater is reserved for vessels with inflammable cargoes which berth end-on to it.

- Calata A. Malaspina extends 656 feet (199^m9) westward from the root of Molo Garibaldi with depths alongside of from 18 to 21 feet (5^m5 to
 30 6^m4) ; it is used by vessels with general cargo.

Calata G.B. Paita extends 1,378 feet (420^m0) south-westward from the western end of Calata A. Malaspina, with depths alongside of from 28 to 29 feet (8^m5 to 8^m8) ; it is used by vessels with general cargo.

- A red can buoy, used for mooring large vessels, is moored about
 35 three-quarters of a cable southward of the middle of Calata A. Malaspina (*Lat.* $44^\circ 07' N.$, *Long.* $9^\circ 50' E.$).

Directions.—Vessels entering Porto Mercantile must give way to vessels leaving.

- In certain cases, for the purpose of manœuvring when going alongside
 40 a quay, vessels may keep to their port hand when entering Porto Mercantile. In such cases, they should be on the axis of the entrance at a distance of a quarter of a mile outside the harbour, so that they may ensure that no vessel is leaving before they proceed through the entrance.

- 45 There is a landing place for boats on the inner side of Molo Italia.

Regulations.—The following are extracts from the Port Regulations :—

- Merchant vessels are permitted to remain in Golfo di La Spezia for the time necessary for repairs, refitting or completing commercial
 50 operations, at the discretion of the Commandante Militaire or the Captain of the Port.

Boats belonging to merchant vessels may land at the quay on the north-western side of Porticciolo delle Torpediniere or in Porto Mercantile, alongside Molo Italia.

Chart 155.

Vessels are prohibited from pumping out bilges, residue of tanks, etc., in Golfo di La Spezia or within a distance of 5 miles from the entrance. Refuse, etc., should be dumped exclusively in the area prescribed by the Captain of the Port, and in such a manner that it does not cause silting. 5

Salvage of any material from the sea bed of the gulf is prohibited without previous permission from the Captain of the Port.

City.—Port facilities.—The city of La Spezia is situated on the north-western shore of the roadstead between the naval dockyard and the commercial harbour ; it is spread out on a plain at the foot of some wooded hills. Fronting the buildings close to the shore is a long green strip of public gardens with many palms and other high trees. La Spezia is the principal base of the Italian navy. There is a civil and a naval hospital in the city ; in 1950, its population was 124,494. 10 15

The principal industries are engineering, shipbuilding, refining oil and working marble.

The harbour traffic is principally imports, especially coal, but phosphates, minerals, jute, cereals, oil, timber and clay are also imported. The chief exports are manufactured articles from jute, lead piping, bricks and marble. 20

In 1950, a moderate quantity of coal and a small quantity of fuel oil was obtainable on application to the Captain of the Port.

Fresh provisions and supplies of all kinds are plentiful ; water is laid on to all the quays. 25

Repairs of any kind can be undertaken. There are six dry docks in Seconda Darsena ; for the dimensions of the largest of these, see Appendix I, page 519. There are two small floating docks, each with a capacity of 200 tons, and there are numerous slipways at the various shipyards in Golfo di La Spezia, the largest having a capacity of 1,200 tons. 30

The quays are all fitted with electrically driven cranes, the largest of which is of 15 tons capacity. There is a floating pontoon with a sheerlegs of 450-tons lift.

There are several tugs and numerous dumb lighters in the port. 35

There is regular sea communication with other Mediterranean ports and a ferry service several times daily, between La Spezia, Lerici, Portovenere (*Lat. 44° 03' N., Long. 9° 50' E.*) and other landing places in Golfo di La Spezia.

Deratisation.—Deratisation can be carried out, see page 18. 40

Charts 3907, 157, 1780, 2158a, 449.

CHAPTER IX

WESTERN COAST OF ITALY—PUNTA CORVO TO PROMONTORIO DI
PIOMBINO. ARCIPELAGO TOSCANO

CLIMATE AND WEATHER.—*See* page 29.

Chart 3900.

COAST.—Light.—From Punta Corvo (*Lat.* 44° 02' N., *Long.* 9° 58' E.), the rocky coast trends eastward for about three-quarters of
5 a mile to Punta Bianca, and thence north-eastward for about a similar distance to the mouth of Fiume Magra. Punta Bianca may be identified by a whitish patch low down on the point; within it and high up on the eastern slopes of Monte Marcello is Castello Fabbriotti, a prominent reddish building. The church of Santa Croce, also reddish
10 in colour, may be distinguished below Castello Fabbriotti, and still lower down the slopes are two small yellow houses.

The mouth of Fiume Magra is easily identified by the tall trees which fringe each bank. The village of Bocca di Magra is situated on the western side, and the village of Marinella on the eastern side, of the
15 entrance. A rough breakwater extends about half a cable eastward and north-eastward from abreast Bocca di Magra, and another breakwater extends about 2½ cables from the coast abreast Marinella.

A light is exhibited, at an elevation of 23 feet (7^m0), from a black iron column on a circular iron structure, 20 feet (6^m1) in height, situated
20 on a rock on the eastern side of the river entrance.

A sandbank, nearly awash, stretches across the mouth of Fiume Magra, leaving a narrow channel at either end. The western channel, in which there is a depth of 5 feet (1^m5), is the only practicable entrance, and local knowledge is necessary for using it as the banks are
25 constantly changing.

Fiume Magra to Porto di Livorno.—Aspect.—Between the mouth of Fiume Magra and the city of Livorno, about 33 miles south-south-eastward, the coast consists of a wide unbroken sandy beach, within the northern part of which rises the lofty range of Alpi Apuane,
30 famed for the marble quarries which form prominent white patches on its slopes. The principal peaks of this chain are Monte Sagro, 5,738 feet (1,847^m9) and Monte Pisanino, 6,381 feet (1,944^m9) high, situated, respectively, about 9 and 12 miles east-north-eastward, and Monte Altissimo, 5,213 feet (1,588^m9) and Monte Pania della Croce,
35 6,100 feet (1,859^m3) high, situated, respectively, about 11 and 15 miles eastward, of Punta Bianca. The hills eastward of Livorno appear as islands when seen from abreast the mouth of Fiume Magra.

Charts 157, 1780, 2158a, 449.

Chart 3900.

Within the southern part of this stretch of coast is the extensive plain of Pisa, in which are several lakes. Fiume Serchio flows through the plain, passing between the southern end of Alpi Apuane and Monti Pisani, a group of high mountains about 9 miles eastward of its mouth, and enters the sea about 20 miles south-eastward of Punta Bianca. Fiume Arno passes southward of Monti Pisani and, flowing through the city of Pisa, enters the sea about 6 miles southward of the mouth of Fiume Serchio. The extensive plain, which is covered with dense undergrowth up to about one mile from the city of Livorno, is bounded southward by the hills eastward of that city. 5 10

Owing to the changing sandbanks off the mouths of Fiume Serchio and Fiume Arno, vessels should keep at least half a mile offshore along the southern part of this stretch of coast and considerably more than that distance between the mouth of Fiume Arno and Porto di Livorno. 15

Coast.—The villages of Fosdinovo, situated about 6 miles north-north-eastward of Punta Bianca at an elevation of 1,640 feet (499^m9), and Castelnuovo (*Lat.* 44° 06' N., *Long.* 10° 01' E.), situated about 2 miles southward of Fosdinovo at an elevation of 620 feet (189^m0), are both prominent from seaward. Fosdinovo may be identified by a massive castle which stands close south-eastward of the village, and Castelnuovo contains two square towers, the eastern tower being white and slender. About one mile northward of Fosdinovo is the summit of Monte Nebbione, 2,267 feet (691^m0) high, rounded and ill-defined. 20

The churches of San Nicola and Ortonovo are situated about 1½ miles east-south-eastward, and the same distance south-eastward, respectively, of Castelnuovo, and may be readily distinguished from seaward. *Chart 157, plan of Marina di Carrara.* 25

Marina di Carrara. — Harbour. — Light-buoy. — Light. — The town of Marina di Carrara, which had a population of 6,089 in 1947, lies stretched along the coast for about 1½ miles north-westward of the mouth of Torrente Carrione, which enters the sea about 3 miles eastward of Punta Bianca. The harbour lies about half a mile north-westward of the mouth of this river and is the exporting port for the well-known Carrara marble, being connected with the marble quarries by rail. The belfry of the parochial church, situated about 4 cables north-westward of the mouth of Torrente Carrione, is 148 feet (45^m1) tall and forms an excellent landmark. The villages of Avenza and Carrara, situated about one mile and 3½ miles, respectively, north-eastward of Marina di Carrara, may be distinguished from seaward. 35 40

The harbour is formed by two moles, Molo di Levante and Molo di Ponente; the latter mole has an outer arm called Diga Foranea.

Molo di Levante extends about 3 cables south-south-westward from the coast about 2½ cables north-westward of the mouth of Torrente Carrione; in 1950, work was in progress constructing a quay on the inner side of this mole and also in extending it about half a cable south-westward. A can light-buoy, exhibiting a *green flashing* light, is moored close south-westward of the extension works, about 1½ cables north-eastward of the head of Diga Foranea. 45

Molo di Ponente extends about 2½ cables south-south-westward from the coast about 4½ cables west-north-westward of the root of Molo di Levante, and Diga Foranea extends about 3½ cables south-eastward from the extremity of Molo di Ponente; in 1950, work was in progress constructing a quay on the inner side of Molo di Ponente and at that 50

Charts 3900, 157, 1780, 2158a, 449.

Chart 157, plan of Marina di Carrara.

date, a length of about a quarter of a cable, with a least depth alongside of $2\frac{3}{4}$ fathoms (5^m0), had been completed.

A light is exhibited, at an elevation of 39 feet (11^m9), from an iron structure painted in red and white stripes, 16 feet (4^m9) in height, situated on the head of Diga Foranea.

Pontile Walton (*Lat. 44° 02' N., Long. 10° 03' E.*), a cargo pier about $1\frac{1}{2}$ cables long, projects into the harbour from a position on the coast about $2\frac{3}{4}$ cables north-westward of the root of Molo di Levante. This pier is connected with the marble quarries by rail and is normally used for loading marble into vessels alongside it ; it was extensively damaged during hostilities, and in 1950 repair work was in progress.

There are general depths of from $2\frac{1}{2}$ to $3\frac{1}{2}$ fathoms (4^m6 to 6^m4) in the middle of the harbour and there are several mooring buoys in the inner part of the harbour, close off Molo di Ponente.

Diga Foranea affords shelter in south-westerly winds to the southern part of the harbour but these winds, if strong, raise a moderate sea at Pontile Walton. Strong south-easterly winds at times prevent cargo being worked alongside Pontile Walton.

Directions.—Vessels should approach the entrance to the harbour with great caution and should sound continuously as the depths off this part of the coast are liable to change. In order to avoid the under-water foundations, vessels should give a berth of at least 100 feet (30^m5) to the head of Diga Foranea.

Port facilities.—Fresh provisions are scarce. Fresh water can be obtained alongside Molo di Ponente.

All equipment for working cargo was destroyed during hostilities and had not been replaced in 1947.

Repairs to small craft can normally be undertaken.

Chart 3900.

Coast.—From Marina di Carrara the low and sandy coast trends south-westward for about 3 miles to Marina di Massa, a tourist resort with numerous hotels and villas lining the beach along an avenue which crosses several streams spanned by concrete bridges ; in 1947, the town had a population of 5,251. Behind the town is a dense pine wood in rear of which and about $2\frac{1}{2}$ miles inland, the town of Massa is clearly visible from seaward. Torre Balilla, 164 feet (50^m0) in height and shaped like a beehive, lies about $1\frac{1}{2}$ miles north-westward of Marina di Massa and is the most prominent landmark between that town and Marina di Carrara.

The remains of a wooden pier project from the coast abreast the town ; a 10-foot (3^m0) sandy patch lies close to these remains and about three-quarters of a cable offshore. Vessels are cautioned that the inshore depths in this vicinity are subject to change after gales.

Fortino Cinquale, a small square fort on which stands a red house, stands close within the coast about $2\frac{1}{2}$ miles south-eastward of Marina di Massa. From Fortino Cinquale, the coast trends south-eastward for about $1\frac{3}{4}$ miles to Forte dei Marmi, a popular bathing resort which, in 1947, had a population of 6,213. The town lies stretched along the beach and is easily identified by several large buildings prominent among which is the Grand Hotel, a yellowish three-storeyed building with a flat roof surmounted by two superstructures. Colonia Marina Ilva, a large grey building with a semi-circular façade, situated amongst pine trees about one mile north-westward of the town, is also prominent.

Chart 3900.

The remains of a wooden pier project from the coast abreast the town.

Between Forte di Marmi and Viareggio, about 6 miles south-south-eastward, the low and sandy coast is backed by thick pine woods, amongst which are several villages which are inconspicuous from seaward. 5

Chart 157, plan of Viareggio.

Porto di Viareggio. — Light. — Anchorage. — Porto di Viareggio comprises Porto Esterno, an outer harbour protected by a mole and a breakwater, and Porto Canale, an inner harbour which consists of the outer part of Canale della Burlamacca, together with three basins. Canale della Burlamacca is the outlet for Lago di Massaciuccoli, a lake lying about 3 miles south-eastward of the town. The entrance to the canal lies about $6\frac{1}{2}$ miles south-south-eastward of Forte dei Marmi. 10 15

The town of Viareggio (*Lat. 43° 52' N., Long. 10° 15' E.*) is situated on a plain between pine woods on the northern side of Canale della Burlamacca. There are several large hotels, interspersed with villas and gardens, which line an esplanade running parallel with the coast; prominent among them is Hotel Reale, which has two square towers and is the largest building of those facing the sea, situated about three-quarters of a mile north-north-westward of the canal entrance. Another hotel, four-storeyed, painted yellow with a curved façade facing southward and westward, is also prominent. At night, some of these hotels exhibit *red* illuminated signs which must not be mistaken for the *red* light exhibited from the head of the northern mole, *see* below. 20 25

Viareggio light is exhibited, at an elevation of 54 feet (16^m5), from a white circular tower, situated at the corner of a one-storeyed white building on the southern bank of Canale della Burlamacca, about $1\frac{1}{2}$ cables within the entrance. 30

The anchorage off Viareggio is exposed to westerly winds. There is good holding ground westward and north-westward of the entrance to the harbour but vessels are recommended to anchor with a good scope of cable, as winds from the western semi-circle, if strong, raise a considerable sea. 35

Porto Esterno.—Depths.—Lights.—Porto Esterno is protected on the north by a mole extending about $3\frac{1}{4}$ cables west-south-westward from the northern entrance point of Canale della Burlamacca, the outer half cable of which was submerged in 1948, and on the south and west by a breakwater extending in a wide curve about $2\frac{3}{4}$ cables north-westward from a position about a quarter of a mile southward of the canal entrance. 40

A mole projects about three-quarters of a cable west-south-westward into Porto Esterno from the southern entrance point of Canale della Burlamacca. 45

There are normally depths of from 10 to 15 feet (3^m0 to 4^m6) in the entrance and in the middle of Porto Esterno, but the harbour is liable to silt up and constant dredging is necessary. Gales may also reduce the depths in the entrance and harbour, sometimes by as much as 8 feet (2^m4). 50

Porto Esterno affords good shelter to small craft during winds from north through east and south to south-west. It is not possible to berth alongside the mole or breakwater; a quay which formerly lined the inner side of the mole was destroyed during hostilities.

Charts 3900, 157, 1780, 2158a, 449.

Chart 157, plan of Viareggio.

A light is exhibited, at an elevation of 30 feet (9^m1), from a white iron framework structure, 15 feet (4^m6) in height, situated on the head of the breakwater.

- 5 A light is exhibited, at an elevation of 30 feet (9^m1), from a white iron framework structure, 15 feet (4^m6) in height, situated at the end of the above-water part of the northern mole, about half a cable within the submerged head.

- Two lights, disposed vertically, are exhibited, at an elevation of
10 about 21 feet (6^m4), from a white concrete post, 15 feet (4^m6) in height, situated on the head of the mole projecting from the southern entrance point of the canal.

- Porto Canale.—Depths.**—Canale della Burlamacca enters the sea between the moles described above and Porto Canale forms its outer
15 part. The inner sides of both moles were formerly quayed but the quays were destroyed during hostilities, and in 1947 neither quay had been repaired. The canal entrance is 100 feet (30^m5) wide with depths of about 10 feet (3^m0), but both width and depths decrease on proceeding inward. Constant dredging is necessary to maintain a depth of
20 about 8½ feet (2^m6) but, after gales in winter, the depths are as little as 6 feet (1^m8).

- There are three basins on the southern side of the canal. Close eastward of the Harbour Master's office, a building at the south-western end of the town about 1½ cables east-north-eastward of Viareggio
25 light-structure, an opening in the southern bank of the canal leads into Darsena Toscana, a basin which communicates on its western side with Darsena Italia (*Lat.* 43° 52' N., *Long.* 10° 15' E.); about 3 cables farther up the canal, another opening in the southern bank leads into Darsena Lucca. The depths in these three basins are maintained at
30 about 8 feet (2^m4).

A new basin, which is entered direct from Porto Esterno, has been constructed between Darsena Italia and Porto Esterno, but in 1950 the entrance to this basin was reported to be entirely silted up.

- Town.—Port facilities.**—The town of Viareggio is a popular
35 tourist and bathing resort; in 1947, it had a population of about 40,000. There is a certain amount of small vessels traffic in the harbour, the principal trade being the export of marble from the Carrara quarries, but the importance of Porto di Viareggio lies in its ship-building yards, mostly around Darsena Toscana, where large numbers
40 of auxiliary sailing vessels for the Mediterranean coasting trade are built, equipped and repaired.

There is a hospital of moderate size in the town.

Small quantities of Diesel oil and petrol are maintained.

- Fresh provisions are plentiful. Fresh water is available at the con-
45 necting passage between Darsena Toscana and Darsena Italia.

All repairs to small craft can normally be undertaken. There are slipways in each of the three basins; the largest slipway has a capacity of 800 tons. There are several lighters in the port.

- All equipment for handling cargoes was destroyed during hostilities,
50 and in 1947 had not been replaced.

Currents.—Sea level.—In Porto Canale, there is usually an outgoing current named *Corrente della Burlamacca*.

- In the vicinity of Porto di Viareggio there is usually a north-going current along the coast, but it is much influenced by the prevailing
55 wind.

Charts 3900, 157, 1780, 2158a, 449.

Chart 157, plan of Viareggio.

With strong south-westerly winds and a heavy sea, the sea level in Porto Canale may rise as much as 3 feet (0^m9) above its normal level. The persistence of a high sea level in Porto Canale is an indication of bad weather.

Regulations.—Vessels are prohibited from stopping within one mile of the entrance to Porto Esterno. Within this distance, full-powered vessels must navigate at reduced speed and should sound a warning of four short blasts if small craft are not keeping out of the way.

Chart 3900.

Coast. — Viareggio to Livorno. — From Viareggio, the coast trends southward for about 19 miles to Livorno and continues low and sandy. About 5 miles southward of Viareggio is the mouth of Fiume Serchio which is almost completely obstructed by sandbanks. An old battery stands about half a mile south-eastward of the river mouth.

Fiume Arno, which rises in the Apennines and flows through Pisa, enters the sea about 6 miles southward of the mouth of Fiume Serchio. It is navigable by boats as far as Florence, a distance of about 60 miles from its mouth. The entrance, commonly called Bocca d'Arno, may be identified by two jetties extending westward, one from each entrance point; the northern jetty is about 1½ cables, and the southern jetty about one cable, in length.

Marina di Pisa (*Lat. 43° 40' N., Long. 01° 16' E.*), a popular tourist and bathing resort which had a population of 3,251 in 1947, extends southward along the coast for about 1½ miles from the southern side of Bocca d'Arno. Prominent landmarks in the town are:—The white sheds of an aircraft works, situated on the southern bank of Fiume Arno; a church with a sloping roof and a slender belfry, situated about 2 cables southward of the river; Villa Santa, a yellowish building with a stumpy, crenellated tower, situated in the centre of the town; and the high building of a large orphanage, about 300 feet (91^m4) in length, situated about one mile southward of the river mouth.

Temporary anchorage may be obtained off Marina di Pisa, but owing to the shifting nature of the bottom caused by deposit from Fiume Arno, and the influence of gales, caution is necessary when approaching the land and vessels should sound constantly. Onshore winds, if strong, quickly raise a short and dangerous sea. Several groynes project from the beach abreast Marina di Pisa and the best landing place is in Bocca d'Arno. A small quantity of provisions can be obtained locally or a large amount from Pisa.

From Marina di Pisa, the coast trends southward for about 7 miles to Bocca Nord, the northern entrance to Porto di Livorno.

Chart 2554, plan of Rada di Livorno.

Secche della Meloria.—Light.—Secche della Meloria consists of a series of shoals of sand and mud with occasional patches of rock and weed, which lie parallel with the coast abreast Porto di Livorno from about 2½ to 5 miles offshore. There are depths of from 10 to 18 feet (3^m0 to 5^m5) on the major part of the shoals, but at the southern end there are two drying rocky patches with depths of less than 6 feet (1^m8) surrounding them.

A light is exhibited, at an elevation of 60 feet (18^m3), from a hexagonal hut on a white iron pyramidal



*Secche della Meloria
light-structure.*

Chart 2554, plan of Rada di Livorno.

framework structure, 52 feet (15^m8) in height, situated on the southern drying patch.

5 Torre della Meloria, an old square building, 66 feet (20^m1) in height, with arches at its base, stands on the northern drying patch, about one cable northward of the light-structure.

The northern and western extremities of Secche della Meloria, situated, respectively, about 3½ miles northward and 3½ miles north-north-westward of Torre della Meloria, are known as Testa di Tramontana
10 and Testa di Ponente.

Secca di Fuori, a detached shoal of moderate extent, lies about 1½ miles west-south-westward of Testa di Ponente and has a least depth of 4½ fathoms (8^m2) over it; there are depths of from 6½ to 10 fathoms (11^m9 to 18^m3) between this shoal and Secche della Meloria.

15 The sea breaks over all the above-mentioned shoals during southerly and westerly gales.

Outlying light-buoy.—A pillar light-buoy (chart 3900), painted black and exhibiting a *white flashing* light giving a *short flash every eight seconds*, is moored about 7 miles west-north-westward of Torre della
20 Meloria.

PORTO DI LIVORNO.—General remarks.—Porto di Livorno is a commercial harbour of growing importance; in addition to sea-borne traffic, the harbour is connected with the city of Pisa by Canale dei Navicelli, which forms an important waterway for the carriage of
25 goods in either direction. The city of Livorno is situated on a wide plain backed by hills about 7¾ miles southward of the mouth of Fiume Arno. The suburbs of Ardenza (*Lat. 43° 31' N., Long. 10° 19' E.*) and Antignano are situated on the coast about 2 and 3¼ miles, respectively, southward of the centre of the city.

30 The following are prominent landmarks in the port:—Torre del Marzocco, white, slender and hexagonal with a tiled roof, situated on the coast at the northern end of the city, about 7 miles southward of the mouth of Fiume Arno; a thin white tower, 185 feet (56^m4) in height, about 11 cables north-eastward of Torre del Marzocco; a
35 Dominican convent with a cupola, situated about 7 cables south-south-eastward of Torre del Marzocco; the reddish square belfry of the cathedral, situated about 3 cables southward of the Dominican convent; the grain silos, massive buildings, about 148 feet (45^m1) in height, painted yellow with black edges and situated about 4½ cables west-
40 south-westward of the cathedral; and the cranes of the Odero-Terni-Orlando shipyard, situated about half a mile southward of the grain silos.

Vessels approaching from northward may identify several forts, a large white building, a water tower and two other towers, all situated
45 between 1¾ and 3 miles northward of Torre del Marzocco on the low even strip of Calambrone beach and, close northward of Torre del Marzocco, numerous light-coloured oil tanks. Vessels approaching from southward will readily identify the Naval Academy, a large grey building with a square clock tower surmounted by a flagstaff, situated
50 about 1½ miles southward of the cathedral, and the summit of Montenero, 1,023 feet (311^m8) high, about 3 miles farther south-eastward.

Light.—Signal station.—Livorno main light is exhibited, at an elevation of 161 feet (49^m1), from a white lantern on the flat roof of a

Charts 3900, 157, 1780, 2158a, 449.

Chart 2554, plan of Rada di Livorno.

grain silo, 154 feet (46^m9) in height, situated on Calata Sgarallino, about 4½ cables west-north-westward of the cathedral.

A signal station is situated at the clock tower of the Naval Academy building.

Pilotage.—Pilotage is compulsory for all vessels exceeding 300 tons gross both for entering and for leaving Porto di Livorno. The pilot office is situated on the head of Molo Mediceo, about 2½ cables west-south-westward of Livorno main light-structure. Pilots embark about one mile from the harbour entrance.

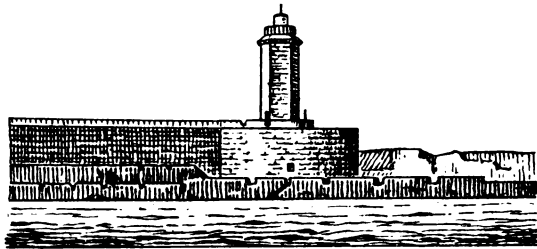
Currents.—During summer, with persistent north-westerly winds there is usually a strong south-going current between Secche della Meloria and the coast and also in Avamporto. During south-easterly and south-westerly winds, a north-going current is found between Secche della Meloria and the coast.

Chart 2554, plan of Porto di Livorno.

Breakwaters.—Lights.—Three breakwaters protect Porto di Livorno from the sea. Diga Marzocco, which is low, extends about 8 cables south-westward from close to Torre del Marzocco and shelters the port from northward. Diga Meloria, which is low, and Diga Curvilinea, which is high, together form one breakwater which extends in a general southerly direction for about 9 cables from the head of the former, situated about 1½ cables westward of the head of Diga Marzocco and protects the harbour from westward. Diga della Vegliaia, which is low, extends about 2½ cables east-south-eastward from its head, situated about 3½ cables south-south-westward of the southern extremity of Diga Curvilinea, and protects the harbour from southward.

During and after periods of strong south-easterly winds which usually last about three days in winter, a considerable swell is felt in the harbour which at times makes it impossible for large vessels to enter.

A light is exhibited, at an elevation of 23 feet (7^m0), from an iron framework structure on a square base, 16 feet (4^m9) in height, situated on the northern extremity of Diga Curvilinea (Lat. 43° 33' N., Long. 10° 17' E.).



Diga Curvilinea light-tower.

A light is exhibited, at an elevation of 74 feet (22^m6), from a yellow octagonal tower on a circular base, 67 feet (20^m4) in height, situated on the southern extremity of Diga Curvilinea.

A light is exhibited, at an elevation of 56 feet (17^m1), from a white framework structure, surmounted by a white lantern, 44 feet (13^m4) in height, situated on the head of Diga della Vegliaia.

Chart 2554, plan of Rada di Livorno.

Rada di Livorno.—Anchorage.—Buoyage.—Rada di Livorno, situated between Secche della Meloria and the northern part of Porto di Livorno, affords anchorage with some protection from south-westerly squalls, as follows:—

(a) In depths of about 6 fathoms (11^m0), sand, with Torre del Mar-

Charts 3900, 157, 1780, 2158a, 449.

Chart 2554, plan of Rada di Livorno.

zocco bearing 094° and Secche della Meloria light-structure bearing about 232° , but it must be borne in mind that there are depths of about $4\frac{1}{2}$ fathoms (8^m2) about 3 cables north-eastward, and of $3\frac{3}{4}$ fathoms (6^m9) about $4\frac{1}{2}$ cables south-westward, of this anchorage. During strong south-westerly winds, vessels awaiting calm weather to enter harbour generally use this anchorage.

(b) In depths of about 5 fathoms (9^m1), mud, with Secche della Meloria light-structure bearing 235° and the light-structure on the northern end of Diga Curvilinea bearing 145° .

(c) In depths of about 6 fathoms (11^m0), weed, with Secche della Meloria light-structure bearing 245° and the light-structure on the northern end of Diga Curvilinea bearing 112° .

The above anchorages necessitate approaching within depths of 5 fathoms (9^m1). Vessels of deep draught who wish to keep in depths of more than 5 fathoms (9^m1) should approach from southward of Secche della Meloria and, in calm or moderate weather, can anchor, in depths of from 6 to 7 fathoms (11^m0 to 12^m8), sand, with Secche della Meloria light-structure bearing 260° and the light-structure on the head of Diga della Vegliaia bearing 143° ; care must be taken not to go northward of the alignment of the light-structure on the northern end of Diga Curvilinea and a light-structure on the head of Diga Rettilinea (page 283) bearing about 100° .

A conical light-buoy, painted in red and white vertical stripes and exhibiting a *green flashing light every six seconds*, is moored about 2 miles north-westward of the northern end of Diga Meloria.

A can buoy, surmounted by two balls, disposed vertically, is moored about 9 cables west-north-westward of the northern end of Diga Meloria.

A mooring buoy is moored about $5\frac{1}{2}$ cables north-north-westward of the northern end of Diga Meloria.

Prohibited anchorage.—Owing to the existence of submarine cables, anchorage is prohibited in an area bounded by lines joining the following positions:—A point about 18 cables 250° from the light-structure on the head of Diga della Vegliaia; a point about $26\frac{1}{2}$ cables 218° from the same light; a point about 14 cables 193° from the same light; a point about $8\frac{3}{4}$ cables 202° from the same light; and a point on the coast about 7 cables 113° from the same light.

Chart 2554, plan of Porto di Livorno.

Harbour. — Entrances. — Light-buoy. — The quays and their equipment suffered extensive damage during the recent hostilities, but in 1950 a large part of the war damage had been made good.

The harbour is divided into four main parts, Avamporto, Bacino San Stefano, Porto Nuovo and Porto Vecchio. It has two entrances, Bocca Nord (*Lat. $43^{\circ} 33' N.$, Long. $10^{\circ} 17' E.$*), which is 361 yards (330^m6) wide between the head of Diga Marzocco and the eastern side of Diga Meloria, with depths of from 23 to 27 feet (7^m0 to 8^m2), and Bocca Sud, which is about 330 yards (301^m7) wide between the southern extremity of Diga Curvilinea and a shoal bank extending from the coast eastward of it, with depths of from 26 to 36 feet (7^m9 to 11^m0) in the entrance, except in the eastern part close to the extremity of the shoal bank.

In 1950, Bocca Nord was blocked by wrecks and could only be used by vessels of a draught not exceeding 21 feet (6^m4) and with local knowledge. Bocca Sud was partially blocked but there was a clear

Charts 3900, 157, 1780, 2158a.

Chart 2554, plan of Porto di Livorno.

passage with a least depth of 29 feet (8^m8) between Diga Curvilinea and the wrecks.

A conical light-buoy, painted green and exhibiting a *green flashing* light showing a *short flash every three seconds*, is moored about 1½ cables north-eastward of the southern extremity of Diga Curvilinea and marks the north-eastern side of the clear passage. 5

Prohibited anchorage and passage.—Anchorage is prohibited in areas in Bocca Nord and Bocca Sud, the limits of which are indicated by pecked lines on the chart. 10

Passage between the eastern end of Diga della Vegliaia and the mainland eastward is prohibited.

Avamporto. — Light. — Buoys. — Avamporto is entered through Bocca Sud and lies between Diga Curvilinea and Molo Mediceo; the former shelters it from westward and it is partly sheltered from southward by Diga della Vegliaia, but strong southerly and south-westerly winds raise a moderate sea. There are depths of from 4 to 5½ fathoms (7^m3 to 10^m1) in the western part of Avamporto, and a limited number of vessels can be berthed stern-to on Diga Curvilinea; vessels must be berthed at a sufficient distance apart to permit them to cast off their sterns and swing to their anchors in case of southerly or south-westerly gales. 15 20

The eastern part of Avamporto is filled by a bank on which the depths are less than 3 fathoms (5^m5) which fronts Molo Mediceo; Secca Piana, a ledge of above-water rocks, lies on the southern part of this bank about 2¼ cables east-north-eastward of the southern extremity of Diga Curvilinea. There are the ruins of a lighthouse at the southern end of Secca Piana and a sunken ledge projects about three-quarters of a cable west-south-westward from abreast the ruins. 25

A light is exhibited, at an elevation of 25 feet (7^m6), from a black and white iron structure, 16 feet (4^m9) in height, situated on the head of Molo Mediceo. 30

Bacino San Stefano.—Lights.—Buoyage.—Bacino San Stefano is protected from westward by Diga Meloria and from northward by Diga Marzocco, and its south-eastern side is formed by Diga Rettilinea. As stated previously, Bocca Nord, at the north-western corner of this basin, is blocked except for a passage available to vessels up to a draught of 21 feet (6^m4); within Bocca Nord, there are depths of from 4 to 5 fathoms (7^m3 to 9^m1) in the fairway of the western part of the basin, but the eastern part is shoal, except for a buoyed channel which is dredged to a depth of 5 fathoms (9^m1), leading to Darsena dei Petroli and Porto Nuovo. 35 40

A light is exhibited, at an elevation of 26 feet (7^m9), from a red iron framework structure on a square base, situated on the head of Diga Rettilinea. 45

A can light-buoy, painted red and exhibiting a *red flashing* light every two seconds, is moored about 1½ cables east-north-eastward of the head of Diga Marzocco.

A conical light-buoy, painted black and exhibiting a *green flashing* light every two seconds, is moored about 1½ cables eastward of the head of Diga Marzocco. 50

A light is exhibited, at an elevation of 10 feet (3^m0), from a red masonry hut, 5 feet (1^m5) in height, situated on the head of the western mole of Darsena dei Petroli (*Lat.* 43° 34' N., *Long.* 10° 18' E.).

Charts 3900, 157, 1780, 2158a, 449.

Chart 2554, plan of Porto di Livorno.

A light is exhibited, at an elevation of 10 feet (3^m0), from a green masonry hut, 5 feet (1^m5) in height, situated on the head of the western mole of Darsena Pisa, about three-quarters of a cable south-eastward of the western mole head of Darsena dei Petroli.

A red conical buoy surmounted by a cylinder, and a black conical buoy surmounted by a triangle, are moored about 1½ cables south-westward, and about the same distance south-south-westward, respectively, of the western mole head of Darsena dei Petroli, and mark the north-western and south-eastern sides of the dredged channel.

Darsena dei Petroli is formed by two moles about half a cable apart, which extend southward from Diga Marzocco from positions close to its root. A short fuelling pier projects into Darsena dei Petroli from each of these moles; in 1950, a vessel not exceeding 28 feet (8^m5) in draught could berth at the head of each of these piers at the same time.

Darsena Pisa is situated about one cable southward of Darsena dei Petroli and has depths of from 10 to 15 feet (3^m0 to 4^m6); on the southern quay of this basin are some shipyards where small craft are refitted and repaired.

Darsena dei Calafati is situated on the southern side of Darsena Pisa. Its western and southern sides are protected by moles leaving an entrance only 27 yards (24^m7) wide, within which are depths of from 5 to 12 feet (1^m5 to 3^m7).

Porto Nuovo.—Quayage.—Depths.—Porto Nuovo lies north-eastward of Bacino San Stefano and consists of Bacino di Evoluzione, Darsena Ammiraglio Iacopo Inghirami, Bacino Centrale, Darsena Ugione and Bacino Industriale.

Bacino di Evoluzione is entered from a continuation north-eastward of the dredged channel to Darsena dei Petroli. It has general depths of from 4 to 5 fathoms (7^m3 to 9^m1), and in 1950 vessels not exceeding 29 feet (8^m8) in draught could berth at Calata Tripoli, the quay on its northern side. At the north-western corner of this basin is the entrance to Canale dei Navicelli, which connects Porto di Livorno with the city of Pisa.

Darsena Ammiraglio Iacopo Inghirami lies northward of Bacino di Evoluzione and is completely lined with quays; in 1950, vessels not exceeding 28 feet (8^m5) in draught could berth at these quays.

Bacino Centrale is entered from the north-eastern corner of Bacino di Evoluzione and connects that basin with Bacino Industriale. In 1950, vessels not exceeding 28 feet (8^m5) in draught could berth at Calata Bengasi, which forms the north-western side of this basin.

Bacino Industriale extends about 7 cables north-north-eastward from the north-eastern end of Bacino Centrale. The fairway of this basin has been dredged to a depth of 29 feet (8^m8) and it is completely lined with quays which are used principally by small craft discharging ore for the use of the numerous factories in the vicinity.

Darsena Ugione (*Lat.* 43° 34' N., *Long.* 10° 19' E.), situated on the eastern side of Bacino Industriale close to the junction of that basin with Bacino Centrale, is a small basin used for loading tankers. The quay on the northern side of the basin is connected by pipe line with oil storage tanks, and vessels not exceeding 28 feet (8^m5) in draught can be berthed at a distance of about 50 feet (15^m2) from the face of this quay.

Porto Vecchio. — Lights. — Quayage. — Depths. — Porto

Charts 3900, 157, 1780, 2158a, 449.

Chart 2554, plan of Porto di Livorno.

Vecchio consists of Porto Mediceo with Darsena Vecchia and Darsena Nuova opening from it, and Bacino Cappellini, leading to Bacino Firenze and to Darsena della Stazione Marittima.

Porto Mediceo is entered between the heads of Diga Rettilinea and Molo Mediceo; there are the ruins of an ancient fortress surmounted by a flagstaff on the head of Molo Mediceo. Livorno main light, situated on Calata Sgarallino, the quay on the northern side of Porto Mediceo, and the lights on the heads of Diga Rettilinea and Molo Mediceo, are described on pages 280 and 283.

Two lights, disposed vertically, are exhibited, at an elevation of 16 feet (4^m9), from an iron post, 11 feet (3^m4) in height, situated on the western extremity of Calata Sgarallino.

There are depths of from 25 to 29 feet (7^m6 to 8^m8) in the entrance and in the fairway of Molo Mediceo, and vessels not exceeding 24 feet (7^m3) in draught can be berthed in it. Parts of Calata del Molo Mediceo and Calata della Dogana, the quays on the western and eastern sides of the basin, are reserved for men-of-war; the latter usually berth end-on to Calata della Dogana with their sterns secured to that quay at a distance of from 20 to 26 feet (6^m1 to 7^m9) from it. Calata Sgarallino is usually reserved for passenger vessels. The landing place for all boats is at some steps on a low quay forming the northern end of Calata della Dogana, abreast the offices of the Captain of the Port.

Darsena Vecchia is entered at the north-eastern corner of Porto Mediceo through La Bocca, a passage about a quarter of a cable wide between the northern end of Calata della Dogana and the south-western bastion of an ancient fort with a circular tower, situated at the eastern end of Calata Sgarallino. At the northern end of this basin is a canal leading through the city to Darsena Ugione in Porto Nuovo, and at its southern end a boat passage leads under Ponte Nuovo to Darsena Nuova. There are depths of from 13 to 21 feet (4^m0 to 6^m4) in Darsena Vecchia.

Darsena Nuova is situated southward of Darsena Vecchia. It is entered through a passage about 76 feet (23^m1) wide situated at the south-eastern corner of Porto Mediceo; there are depths of 23 feet (7^m0) in the passage which is crossed by a swing bridge. There are depths of from 23 to 26 feet (7^m0 to 7^m9) in Darsena Nuova; there is a dry dock at its northern end and at its southern end are the workshops of a shipbuilding yard.

Bacino Cappellini is entered from the northern part of Porto Mediceo, between Diga Rettilinea and the western end of Calata Sgarallino, and it extends about 2¼ cables north-eastward. In 1950, vessels of a draught up to 28 feet (8^m5) could berth alongside Calata Orlando and Calata del Deposito Franco, the quays on the north-western and south-eastern sides of the basin; at the latter quay, grain cargoes can be discharged directly into the silos, which have a capacity of 12,000 tons.

Bacino Firenze (*Lat.* 43° 33' N., *Long.* 10° 18' E.) is a narrow basin with depths of from 23 to 29 feet (7^m0 to 8^m8), which extends north-eastward for about a quarter of a mile from the north-eastern end of Bacino Cappellini. In 1950, the quays on the north-western and south-eastern sides of this basin had depths alongside of from 26 to 27 feet (7^m9 to 8^m2), and were chiefly used by vessels discharging coal.

Canale delle Industrie is entered at the north-eastern end of Bacino

Charts 3900, 157, 1780, 2158a, 449.

Chart 2554, plan of Porto di Livorno.

Firenze and connects that basin with Bacino di Evoluzione in Porto Nuovo. The canal is only available to lighters and vessels without masts or top hamper as it is crossed by fixed bridges.

5 **Darsena della Stazione Marittima** is a small rectangular basin entered from the eastern corner of Bacino Cappellini by a narrow passage crossed by a fixed bridge. It has depths of from 7 to 12 feet (2^m1 to 3^m7) and is used chiefly by coal lighters. There is a railway station at its head.

10 **Porticciolo Nazario Sauro.**—Porticciolo Nazario Sauro is a small and shallow harbour situated outside Bocca Sud, about 3 $\frac{1}{4}$ cables east-north-eastward of the eastern end of Diga della Vegliaia. It is protected from northward by the pier of a bathing establishment and from southward and south-westward by a dog-legged mole. The

15 harbour is chiefly used by pleasure craft.

Directions.—Caution.—The harbour was considerably damaged during hostilities, and in 1950 both entrances were still encumbered by wrecks. Bocca Nord was available only to vessels not exceeding 21 feet (6^m4) in draught, such vessels keeping to the starboard side of the channel. Vessels using Bocca Sud must pass between the southern extremity of Diga Curvilinea and a light-buoy moored about 1 $\frac{1}{2}$ cables north-eastward, and they should keep to the port side of the channel.

The cupola of the Dominican convent in line with the light-structure on the southern extremity of Diga Curvilinea, bearing about 049°, leads up to Bocca Sud.

Frequently, especially in the early morning, the land wind blows the smoke from the city and from vessels in the harbour towards Secche della Meloria, producing a mist which prevents the identification of landmarks. In such circumstances, vessels from northward, including those able to enter by Bocca Nord, are advised to pass westward of Secche della Meloria and thence to steer to sight the high land around Montenero, which as a rule is unaffected by mist and may be used to fix the position.

At night, especially in low visibility, vessels approaching from northward, westward or south-westward, may sight some *green fixed* lights which are situated at a moderate elevation in the industrial area northward of the port, before sighting either Secche della Meloria light or Livorno main light (*Lat. 43° 33' N., Long. 10° 18' E.*).

Regulations.—The following are extracted from the Port Regulations :—

Vessels exceeding 21 feet (6^m4) in draught may not use the northern entrance; vessels using this entrance must keep to the starboard side of the channel.

Vessels using the southern entrance must keep to the port side of the channel; if this entrance is occupied by a vessel leaving, a vessel arriving must wait until the entrance is clear.

If the entrance to Porto Mediceo is occupied by a vessel arriving, vessels about to leave must wait until the entrance is clear.

When two vessels are leaving, one from Porto Mediceo and the other from Bacino Cappellini, and are making simultaneously for the entrance, the former must give way to the latter.

Vessels using the entrance to Porto Mediceo must keep to the starboard side of the channel.

Vessels incommoded by sailing vessels, boats or tugs should give

Charts 3900, 157, 1780, 2158a, 449.

Chart 2554, plan of Porto di Livorno.

warning by blowing not less than four *short* blasts on the whistle, when the latter must keep out of the way.

The discharge of refuse and ashes is prohibited in the port and vessels are also prohibited from pumping overboard the residue of tanks, bilges, double bottoms, etc., both within the port and within a distance of 5 kilometres (about $2\frac{1}{4}$ miles) of the entrances. 5

City.—Port facilities.—In 1950, the population of Livorno was 147,157. There are several hospitals which receive seamen.

The chief industries are shipbuilding and repairing, general metal industries and oil refinery. There is a large crude oil refinery close northward of the city. 10

The principal exports are marble, bricks, hemp, cornflower, cement, hides, wines and glassware; imports are coal, crude oil, copper, phosphates and other fertilizers, cereals and cellulose. 15

Large quantities of coal, fuel oil and diesel oil are maintained. Fresh provisions and supplies of all kinds are available. Water is laid on to the quays and can also be supplied in tank lighters.

There are several tugs, one of which is equipped for salvage work.

All equipment for working cargo was destroyed during hostilities, but in 1950 all quays except some in Porto Nuovo were equipped with fixed and mobile cranes and there are several floating pontoon cranes throughout the port. 20

Repairs of all kinds can be undertaken. There is a dry dock in Darsena Nuova; for dimensions, *see* Appendix I, page 519. There are several slipways, the largest of which has a capacity of 1,000 tons. 25

There is regular sea communication with all parts of the world.

Deratisation.—Deratisation can be carried out, *see* page 18. The disinfecting station is situated on the head of Diga Rettilinea.

Climatic table.—*See* page 42. 30

*Chart 2554, plan of Rada di Livorno.***COAST.—Porto di Livorno to mouth of Fiume Cecina.**

Lights.—Between the southern entrance to Porto di Livorno and the suburb of Antignano, about 3 miles south-south-eastward, the coast is broken, rocky and fronted by a bank on which the depths are less than 5 fathoms (9^m1), which in places extends as much as half a mile offshore. The Naval Academy, with its square clock tower and signal station (page 281), is situated about one mile south-south-eastward of Bocca Sud. There are two small harbours, each sheltered by a short mole, situated close north-westward, and about 2 cables southward, respectively, of the Naval Academy. 35 40

A light is exhibited, at an elevation of 20 feet (6^m1), from a post, painted in black and white horizontal bands, 15 feet (4^m6) in height, situated on the mole close north-westward of the Naval Academy.

A light is exhibited, at an elevation of 18 feet (5^m5), from a post, painted in black and white horizontal bands, 15 feet (4^m6) in height, situated on the mole about 2 cables southward of the Naval Academy. 45

A light for the use of aircraft is exhibited from each of two radio masts, situated about $1\frac{1}{2}$ cables south-south-eastward of the Naval Academy. 50

The suburb of Ardenza (*Lat.* $43^\circ 31' N.$, *Long.* $10^\circ 19' E.$), situated about one mile south-south-eastward of the Naval Academy, can be readily identified by a white water tower and by the belfry of the

Charts 3900, 157, 1780, 2158a, 449.

Chart 2554, plan of Rada di Livorno.

church, both of which are prominent ; it is a popular bathing resort and contains numerous large villas with gardens. It has a small boat harbour protected by two moles, with depths of from 2 to 5 feet (0^m6 5 to 1^m5) in it.

Antignano, situated about 1½ miles southward of Ardenza and near the foot of Montenero, also contains numerous villas. There is a circular tower on the summit of Montenero and a white chapel high up on its slopes. The ruins of a signal station are situated on the 10 summit of Montaccio, a hill 830 feet (252^m9) high, about three-quarters of a mile south-south-westward of Montenero.

Torre del Boccale and Torre di Calafuria, situated on the coast about 1½ miles southward of Antignano and about a quarter of a mile apart, are prominent landmarks ; the former is attached to a villa and 15 resembles a castle, and the latter stands close northward of a masonry viaduct. Torre del Romito, a prominent light-coloured and crenellated tower, is situated on the summit of Punta del Romito, a steep wooded headland, 299 feet (91^m1) high, about 1½ miles east-south-eastward of Torre di Calafuria. At the foot of the headland, there is a short 20 mole which protects a small boat harbour.

On the eastern side of Punta del Romito is an inlet at the head of which stands Villa Iana, a building with a crenellated tower close to which is a large masonry factory ; limestone from quarries near Montenero is loaded direct into lighters by means of an overhead 25 cableway between the factory and the shore of the inlet. There is no beach and landing is impracticable. About one mile farther south-eastward is Le Fornaci, which may be identified by a large abandoned factory standing close to the sea.

Charts 3900 and 3901.

30 Between Le Fornaci and Punta Castiglioncello, about 3 miles south-south-eastward, the coast becomes less rugged. Punta Fortullino, about one mile south-eastward of Le Fornaci, may be identified by Casa Fortullino, a square, reddish house standing amongst trees.

Punta Castiglioncello is the extremity of a rocky promontory, 35 relatively low and flat and covered with thick vegetation. It may be identified by the numerous villas and houses on it, amongst which a large crenellated tower and the massive Villa Patrone, also crenellated, are prominent.

Chart 3901.

40 The village of Rosignano Marittimo is situated at an elevation of 597 feet (182^m0) about 3 miles eastward of Punta Castiglioncello and may be identified by the tall reddish belfry of its church ; the southern part of the village is the most elevated.

On the southern side of Punta Castiglioncello is a small bay, and 45 about 2½ miles south-eastward of the point Fiumara Fine flows into the sea. The small town of Rosignano Solvay, which, in 1947, had a population of 4,317, lies stretched along the coast between half a mile and 1½ miles northward of the mouth of Fiumara Fine. Prominent in the centre of the town is a large caustic soda factory with two chim- 50 neys, one of which is very tall, and three large cylindrical tanks.

From the mouth of Fiumara Fine, the coast trends south-south-eastward for about 4½ miles to the mouth of Fiume Cecina and consists of a wide sandy beach. The village of Vada (*Lat.* 43° 21' N., *Long.* 10° 27' E.) is situated close within the beach and between two

Charts 158, 1780, 2158a, 449.

Chart 3901.

pine woods, about $1\frac{1}{2}$ miles southward of the mouth of Fiumara Fine ; the village, which had a population of 2,739 in 1947, is built around its church, which has a prominent dark and slender spire. A light is exhibited from a white square tower on a truncated pyramidal base, 49 feet (14^m9) in height, situated close within the beach, about half a cable south-westward of Vada church.

*Vada light-tower.*

Secche di Vada.—Light.—Between the mouths of Fiumara Fine and Fiume Cecina, the coast is fronted by a bank, which, with depths of less than 3 fathoms (5^m5) over it, and with several rocky patches on it with depths of from 3 to 7 feet (0^m9 to 2^m1) over them, extends from half a mile to $1\frac{1}{2}$ miles offshore, and which, with depths of less than 6 fathoms (11^m0) over it, extends as much as 5 miles offshore. This bank is especially dangerous to small vessels running close to the coast to obtain shelter from strong north-easterly winds.

Secche di Vada lie on the outer part of the bank, between 4 and $4\frac{1}{2}$ miles west-south-westward of Vada light-structure (*Lat.* 43° 21' N., *Long.* 10° 27' E.). They consist of several rocky patches of which the outermost and shoalest has a least depth of 7 feet (2^m1) over it.

A light is exhibited, at an elevation of 55 feet (16^m8), from a white hexagonal hut on a framework structure, 52 feet (15^m8) in height, situated on the 7-foot (2^m1) patch of Secche di Vada. It should be noted that the bank, with depths of less than 6 fathoms (11^m0) over it, extends about one mile westward of the light-structure.

Anchorage.—Anchorage may be obtained north-eastward of Secche di Vada, in depths of about 12 fathoms (21^m9) sand and weed, with Punta Castiglioncello bearing 010° and Secche di Vada light-structure bearing 245°, or in depths of about 7 fathoms (12^m8), mud and weed, with Punta Castiglioncello bearing 000° and Secche di Vada light-structure bearing 256°. Small craft with local knowledge anchor closer inshore abreast Vada village where the bottom of mud and weed affords good holding ground.

Piers.—Buoys.—There is a small wooden landing pier with a depth of 5 feet (1^m5) alongside its head, abreast Vada village. About $3\frac{1}{2}$ cables north-north-westward of this pier is Pontile Vittorio Veneto, a concrete pier about three-quarters of a cable long, which is chiefly used for exporting caustic soda from the factory at Rosignano Solvay and importing coal and raw materials.

A channel marked by six pairs of buoys has been dredged to a depth of 16 feet (4^m9) between the head of the concrete pier and the edge of the 3-fathom (5^m5) shore bank ; two vessels not exceeding 11 feet (3^m4) in draught can berth at the pier at the same time. There are two mobile $3\frac{1}{2}$ -ton cranes on the pier and close to its root is a building surmounted by a flagstaff at which berthing signals are displayed for the information of vessels waiting to go alongside.

In 1947, it was reported that Vada landing pier had suffered extensive war damage and could not be used. It was also reported that there was a least depth of 13 feet (4^m0) in the channel leading to Pontile Vittorio Veneto and that only three pairs of buoys were in

Chart 3901.

place. At that date, the work of dredging the approach channel and increasing the depths alongside the pier to 13 feet (4^m0) was in progress.

- About half a mile southward of Vado landing pier is Pontile Lamberti, 5 a wooden pier belonging to a local brick factory; it is about half a cable in length with a depth alongside its head of 10 feet (3^m0).

Coast.—Mouth of Fiume Cecina to Punta del Molino.—The town of Cecina (*Lat.* 43° 19' N., *Long.* 10° 31' E.), which in 1947 had a population of 5,570, is situated on the southern bank of Fiume 10 Cecina, about 1½ miles above its mouth; it is built on a plain and is partly hidden by trees, but its church with a reddish-brown belfry may be distinguished from seaward.

- Marina di Cecina, a village on the coast close southward of the river mouth, terminates north-westward in Forte di Cecina, a long and 15 prominent building which, owing to its partial destruction during hostilities, resembles a group of buildings. A light-coloured belfry rises in the middle of the village, and a short distance inland between the village and the town of Cecina are three tall chimneys. The village of Montescudaio, which may be identified by a tower at its 20 northern end, lies on the crest of the hills about 6 miles east-north-eastward of Marina di Cecina.

- During summer, the mouth of Fiume Cecina is almost always obstructed by shoals which at times prohibit the entry of even small boats. A ridge of dark sand and mud, on which the depths are less 25 than 6 feet (1^m8), fronts the mouth of the river and runs parallel with the coast for a short distance southward; the position of this ridge, which is liable to change during gales, may be distinguished by the appreciable discoloration of the water over it. There are depths of 3 fathoms (5^m5) about 4½ cables offshore, and of 6 fathoms (11^m0) 30 about one mile offshore, and temporary anchorage may be obtained south-south-westward of Forte di Cecina, but onshore winds, if strong, raise a high sea.

- Forte di Bibbona, situated on the beach about 4 miles south-south-eastward of Marina di Cecina, is low and isolated and consists principally of a reddish circular bastion; the village of Bibbona, situated 35 with its church at an elevation of 262 feet (79^m9), about 3½ miles east-north-eastward of the fort, appears as a white patch on the slopes of the coastal range. Colle Castiglioncello, 1,289 feet (392^m9) high, situated about 5½ miles east-south-eastward of Forte di Bibbona, is 40 crowned by Castello dei Gherardesca, a massive, square building which makes a good landmark.

- Forte di Castagneto, situated on the beach about 4 miles southward of Forte di Bibbona, is similar to the latter in appearance but may be distinguished from it by the proximity of the village of Marina di 45 Castagneto, which lies close northward of it. The village and church of Castagneto are situated at an elevation of 636 feet (193^m8) on the slope of the coastal range about 3 miles east-south-eastward of the fort; southward of the village, the coastal hills draw nearer to the beach.

- 50 Torre Donoratico, a square, tall and slender tower, stands at an elevation of 587 feet (179^m2) on the flat summit of a hill about 2¾ miles south-eastward of Forte di Castagneto. On the beach near the foot of this hill is a long reddish-coloured wall which encloses a tower, two large houses and a small chapel. From this wall, the sandy beach,

Chart 3901.

which is backed by thick undergrowth with no conspicuous features, trends southward for about 3 miles to San Vincenzo.

The village of San Vincenzo (*Lat.* 43° 06' N., *Long.* 10° 33' E.), which in 1947 had a population of 3,927, lies stretched along the beach about 4½ miles southward of Forte di Castagneto. The belfry of its church, situated at the southern end of the village, can be distinguished from an offing by vessels approaching from northward or southward. A disused factory with a tall and prominent chimney stands on the slopes of Monte Rombolo, which attains an elevation of 991 feet (302m) about 2½ miles east-south-eastward of the village, and about 1½ miles farther south-eastward on the slopes of Monte Campiglia is the village of Campiglia Marittima, which has a large isolated factory on its southern side.

The beach abreast the village is fronted to a distance of about one cable by rocky ledges, covered with weed, on which the depths are less than 6 feet (1m8) and which are nearly awash in places. Vessels may obtain temporary anchorage outside these ledges, in depths of from 3 to 5 fathoms (5m5 to 9m1), fine light-coloured sand, at between 2 and 3 cables offshore.

From San Vincenzo, the sandy coast trends about 5½ miles southward to Punta del Molino, a point at which the sandy coast terminates abruptly and becomes rocky. Between about 3 and 4½ miles southward of San Vincenzo the coast is backed by a marshy tract named Paludi di Rimigliano. La Torracchia, an old square tower, stands on the beach near the southern end of Paludi di Rimigliano, with Torre Nuova, larger and surrounded by a group of houses, about 4 cables farther south-westward. Scoglio Stella, a long, dark rock, awash, lies about 4 cables westward of Torre Nuova and about 3 cables offshore.

Punta del Molino, rocky and distinctive, is crowned by Villa de Stefani, a prominent yellow building with a red roof surmounted by a look-out tower. Seen from south-westward, the point appears as a saddle between Poggio del Molino and Poggio San Leonardo, two hills, 167 and 118 feet (50m9 and 36m0) high, respectively, which rise close within the coast; it is rounded, covered with vegetation near the summit and precipitous and bare on the sides.

Porto Baratti.—Light.—Anchorage.—Porto Baratti is a small bay on the northern side of Promontorio di Piombino, which is entered between Punta del Molino and Colle di Populonia, a headland on which is a village of the same name, situated about 1½ miles south-westward. Torre di Populonia, a circular crenellated tower, stands at an elevation of 587 feet (178m9) on the summit of Colle di Populonia. The head of the bay consists of a light-coloured sandy beach, backed by pine woods behind which cultivated ground extends to the foot of the surrounding wooded hills. A farmhouse, named Il Casone, is situated near the middle of the beach, and on its south-western side is a small grey chapel; a short distance eastward of the chapel, another farmhouse, painted red and prominent, overlooks the beach. At the south-western corner of the bay is a group of houses, a tall chimney and a prominent square reddish tower.

A natural breakwater, mostly awash, extends north-eastward from the shore abreast the reddish square tower, and a spit which widens south-eastward and has patches of coarse gravel on it extends beyond

Chart 3901.

the visible head of the breakwater ; there are depths of only 2 or 3 feet (0^m6 to 0^m9) in places on this spit.

A light is exhibited, at an elevation of 246 feet (75^m0), from a framework structure on a truncated, pyramidal hut, 18 feet (4^m0) in height, situated on the northern extremity of Colle di Populonia (Lat. 43° 00' N., Long. 10° 30' E.) which forms the south-western entrance point of Porto Baratti.

Anchorage may be obtained, in depths of about 12 fathoms (21^m9), sand, on a line joining Punta del Molino and Torre di Populonia, with Il Casone bearing 138°. Small vessels with local knowledge may anchor closer inshore ; there are depths of 5 fathoms (9^m1) about 3 cables offshore and of 3 fathoms (5^m5) about 2 cables offshore. There is a wooden landing pier in the south-western corner of the bay with depths of 5 feet (1^m5) alongside it.

Sheltered by the breakwater and the spit extending south-eastward from it is an area in which there are depths of from 10 to 13 feet (3^m0 to 4^m0) ; it is reported that small vessels can ride here safely during south-westerly gales but that it becomes unsafe as soon as the wind veers to west-south-west. A concrete pillar, the terminus of an overhead cableway, is situated about one cable within the breakwater and about three-quarters of a cable offshore and there are mooring buoys moored close to it. The cableway carries iron ore from the local mines which is loaded into small craft moored at the buoys.

Fishing nets.—Tunny nets are laid close westward of the breakwater and extend in a north-westerly direction for about 3½ cables. See page 11.

Charts 3901 and 3906.

CANALE DI PIOMBINO.—Currents.—Canale di Piombino lies between the western coast of Promontorio di Piombino and the north-eastern end of Isola d'Elba (page 306), about 5 miles south-westward ; the depths in the channel are very irregular. Isolotto Palmaiola and Isolotto Cerboli are situated in this channel.

In Canale di Piombino the currents generally follow the direction of the wind. They are not very strong in winter but in summer they attain rates of from half a knot to 2½ knots and are strongest in the middle of the channel. Occasionally currents have been observed setting in directions against the wind.

North-eastern side of Canale di Piombino.—Light.—Signal station.—Danger.—From Torre di Populonia, the north-eastern side of Canale di Piombino trends southward for about 3½ miles to Punta Falcone and thence east-south-eastward for about 2½ miles to the south-eastern extremity of Promontorio di Piombino. This stretch of coast is high, steep and rocky ; Monte Massoncello, 938 feet (285^m9) high and the highest point on the promontory, is situated about 1½ miles southward of Torre di Populonia. The land eastward of the promontory is a low plain and, when seen from a distance, the promontory appears as an island.

Chart 3906.

Punta Falcone, the south-western extremity of the promontory, is a prominent headland and about three-quarters of a cable off it is a triangular rock which should be given a berth of about half a cable ; there is no passage between this rock and the coast. About half a mile

Charts 158, 1780, 2158a, 449.

Chart 3906.

eastward of Punta Falcone, Scogli Orlando extend about half a cable offshore.

Chart 158, plan of Port Vecchio di Piombino.

Piombino (*Lat.* 42° 55' N., *Long.* 10° 32' E.), a town which in 1947 5 had a population of 30,267, is built on the high, steep coast about 1½ miles east-south-eastward of Punta Falcone. A rocky spur, named La Rocchetta projects about 1¼ cables southward from the coast abreast the middle of the town, and on its extremity is a light-coloured, square stone tower; on the western side of the root of the spur is 10 a small boat harbour. A reddish-coloured belfry may be distinguished at the western end of the town; in the centre of the town, overlooking the small boat harbour, is a hospital with a grey, square and slender tower; and on the coast close eastward of the town is Il Castello, an ancient and massive fortress. 15

A light is exhibited, at an elevation of 61 feet (18^m6), from a masonry hut, 16 feet (4^m9) in height, situated on the tower at the extremity of La Rocchetta.

A signal station, consisting of a building painted in black and white chequers, with a flagstaff close to it, is situated at the south-eastern 20 extremity of Promontorio di Piombino, about 8 cables eastward of La Rocchetta. Storm warning signals are displayed, *see* page 11.

Secca del Cimitero, a rocky shoal with depths of from 18 to 21 feet (5^m5 to 6^m4) over it, lies from a quarter to half a mile east-south-eastward of the extremity of La Rocchetta. Vessels should give the 25 coast of Promontorio di Piombino a berth of at least 3½ cables when passing this shoal.

Only a few small craft carrying fruit to Isola d'Elba use the harbour at the root of La Rocchetta as the majority of vessels employed in trade with that island use the neighbouring Porto Vecchio di Piombino 30 (page 323).

Prohibited anchorage.—Owing to the existence of submarine telegraph cables, anchorage is prohibited off the coast between Punta Falcone and the south-eastern extremity of Promontorio di Piombino. 35

Chart 3906.

South-western side of Canale di Piombino.—The south-western side of Canale di Piombino is described on page 306.

Isolotto Palmaiola. — Dangers. — Light. — Fog signal. — Isolotto Palmaiola, situated about 4 miles south-westward of La Rocchetta, is conical in shape with precipitous sides and rises to 40 an elevation of about 300 feet (91^m4). It is steep-to except on its northern side where a shoal spit, on which is a rock, awash, extends over one cable offshore. About 2½ cables north-eastward of the northern extremity of the islet is a rocky 2½-fathom (4^m6) patch, and a rock with a depth of 7 fathoms (12^m8) over it lies about 1¼ miles northward of the same point.

A light is exhibited, at an elevation of 344 feet (104^m8), from a white square tower on a white building, 46 feet (14^m0) in height, situated on the summit of Isolotto Palmaiola. 50



Isolotto Palmaiola light-tower.

A fog signal is sounded from the light-structure.

Distress signals are displayed, *see* page 11.

Charts 3906, 158, 1780, 2158a, 449.

Chart 3906.

Isolotto Cérboli.—Isolotto Cérboli lies about $3\frac{1}{4}$ miles eastward of Isolotto Palmaiola. It is steep-to on all sides, has precipitous coasts, and when seen from north-westward or south-eastward presents an irregular outline. An old tower stands on the summit of the island at an elevation of 243 feet (74^m1). A cultivated area with two small white houses may be distinguished in the north-eastern part of the islet and on its western extremity is a prominent rocky pinnacle which, when seen from northward or southward, resembles an inclined tower.

Chart 158.

ARCIPELAGO TOSCANO.—Arcipelago Toscano consists of the islands of Gorgona (*Lat.* $43^{\circ} 26' N.$, *Long.* $9^{\circ} 54' E.$), Capraia, Elba, Pianosa, Montecristo, Giglio and Giannutri; the islets of Palmaiola and Cérboli (described above); Formiche di Montecristo and Formiche di Grosseto (described on page 328). These islands lie scattered between the northern part of the eastern coast of Corsica and the western coast of Italy between Livorno and Promontorio Argentario (page 332). There are wide and deep passages between the islands and the latter make excellent landmarks when navigating in these waters.

Chart 1719, plan of Gorgona island.

ISOLA GORGONA.—**Signal station.**—Isola Gorgona is the northernmost island of Arcipelago Toscano and lies about 22 miles westward of Punta Castiglione. It is used as a convict settlement but there are a few fishermen who inhabit a group of red houses close within the head of Cala dello Scalo, a cove on the eastern side. Landing on the island is prohibited except with permission of the authorities at Livorno. In 1947, the population of the island was 138.

Isola Gorgona is wooded, hilly and cultivated on its eastern side; the western side is steep and rocky. Punta Gorgona, 837 feet (255^m1) high and the highest point on the island, stands about 2 cables within the western coast. A signal station, painted in black and white chequers, stands on the summit of Punta Gorgona. Storm warning signals are displayed, *see* page 11.

Punta Paratella.—**Light.**—Punta Paratella, situated about three-quarters of a mile north-north-eastward of the signal station, is the northern extremity of the island. A light is exhibited, at an elevation of 346 feet (105^m5), from an iron structure, 16 feet (4^m9) in height, situated about one cable within the extremity of Punta Paratella.

Coast.—**Light.**—From Punta Paratella, the eastern coast of the island trends south-eastward and southward for about $6\frac{1}{2}$ cables to Cala dello Scalo, the principal landing place, which is partly sheltered by a mole which extends about 220 feet (67^m1) north-eastward and northward from the southern entrance point of the cove. Torre Nuova, a tall brick tower in which most of the convicts are lodged, stands high up on the northern side of the cove.

A light is exhibited, at an elevation of 31 feet (9^m4), from a white circular masonry tower, 10 feet (3^m0) in height, situated on the head of the mole at Cala dello Scalo.

The inner part of the mole is quayed and small craft can berth alongside it except during strong winds from the eastern semicircle which raise a heavy and dangerous sea. There is a $1\frac{1}{2}$ -ton crane on the mole.

Charts 3900, 3901, 158, 1780, 2158a, 449.

Chart 1719, plan of Gorgona island.

No fresh provisions are available.

There is regular sea communication between Isola Gorgona and Livorno, Portoferraio (page 301) and Pianosa (page 314).

Telegraph cable.—Beacons.—A submarine telegraph cable is landed near Cala dello Scalo. Two beacons, in line bearing 084° , mark its direction. The front beacon with a notice board is attached to a house about a quarter of a cable from the beach. 5

Coast.—Light.—From Cala dello Scalo, the coast trends south-south-westward for about 7 cables to Punta Cala Scirocco, the southern extremity of the island. There are two coves on this stretch of coast, Cala Martino, about $1\frac{1}{2}$ cables southward of Cala dello Scalo, and Cala Scirocco (Sciro), on the north-eastern side of the point of that name. The former may be identified by the laundry of the settlement, which is situated at the head of the cove with a small waterfall close to it, and the latter by three houses at its head, the centre house being of a reddish colour. Torre Garibaldi, a square tower painted red with a white base and situated at an elevation of 430 feet (131^m) about $1\frac{1}{2}$ cables north-eastward of the head of Cala Scirocco, may also assist in its identification. 10 15 20

A light is exhibited, at an elevation of 149 feet (45^m), from an iron bracket, 16 feet (4^m) in height, situated close within the extremity of Punta Cala Scirocco.

From Punta Cala Scirocco (*Lat.* $43^{\circ} 25' N.$, *Long.* $9^{\circ} 54' E.$), the western coast of the island trends about 6 cables west-north-westward and thence about 8 cables northward to Punta di Capo Zirri; this stretch of coast affords no shelter and its northern part is overlooked by Torre Vecchia, an old fortress standing about 2 cables northward of the signal station at an elevation of 682 feet (207^m), and prominent from either eastward or westward. 25 30

Cala Maestra is a wide bight surrounded by high, bare and rocky cliffs; it is entered between Punta di Capo Zirri and Punta Paratella, about 4 cables east-north-eastward. In calm weather, landing is possible at some steps cut in the rock at the head of the bight, whence a winding pathway leads up the cliff to the settlement. 35

Anchorage.—There is no secure anchorage off Isola Gorgona on account of the rocky bottom and the great depths close to the coast in most places.

Cala Maestra affords temporary shelter from winds from the eastern semicircle, and Cala dello Scalo and Cala Scirocco from winds from the western semicircle. The best berth in Cala Scirocco is midway between the entrance points of the cove, in depths of about 7 fathoms (12^m), sand and weed. 40

Chart 1719, plan of Capraia island.

ISOLA CAPRAIA.—Signal station.—Isola Capraia lies with Punta della Teia (Teglia), its northern extremity, about 31 miles west-north-westward of Punta Falcone (page 292), and about 18 miles eastward of the north-eastern extremity of Corsica. The island is of volcanic origin, mountainous and little cultivated; it extends about $4\frac{1}{2}$ miles in a southerly direction between Punta della Teia and Punta dello Zenobito, its southern extremity. The western coast is steep and barren while the eastern side of the island slopes gradually and is cultivated. A chain of rocky mountains runs parallel with, and about 50

Charts 3900, 3901, 158, 1780, 2158a, 449.

Chart 1719, plan of Capraia island.

half a mile within, the western coast of the island; Monte Castello 1,467 feet (447^m1) high in the northern part, about 1½ miles southward of Punta della Teia, and Monte Arpagna, 1,345 feet (410^m0) high, 5 in the southern part, about one mile northward of Punta dello Zenobito, are the highest peaks in the chain. About the middle of the chain, at an elevation of 1,053 feet (321^m0), and between Monte delle Penne, a peak 1,378 feet (420^m0) high, situated about ¾ cables south-westward of Monte Castello, and Monte Forcone, 1,201 feet (366^m1) high, situated 10 about half a mile farther southward, is Lo Stagnone, a lake drained by a river running east-north-eastward through a valley and entering the sea close southward of Porticciolo di Capraia, on the eastern side of the island.

A signal station stands on the summit of Monte Arpagna; storm 15 warning signals are displayed, *see* page 11.

There is a penal establishment on Capraia and landing on the island or berthing in Porticciolo di Capraia (*Lat.* 43° 03' N., *Long.* 9° 51' E.) is prohibited without previous authorisation.

Eastern side of the island. — Coast. — Dangers. — Light. —

20 A small square fort, partly demolished, stands on Punta della Teia. Le Formiche, a group of above-water rocks the largest of which is 6 feet (1^m8) high, lies about 2 cables north-eastward of the point, and a rock, over which there is a depth of one foot (0^m3), lies nearly in mid-channel in the passage between Le Formiche and Punta della Teia.

25 From Punta della Teia, the eastern coast of the island trends about 7 cables south-eastward to Punta del Vecchiaione (Mortola point); Cala Mortola, an open bight in which there are depths of from 3 to 16 feet (0^m9 to 4^m9), lies close north-westward of the latter point.

Punta delle Barbice, situated about 2 cables southward of Punta del 30 Vecchiaione, is fringed by rocks extending about half a cable offshore. Porto Vecchio, a wide bight open eastward, is entered between Punta delle Barbice and Punta del Porto Vecchio, about 4 cables southward.

Between Punta del Porto Vecchio and Punta Ferraione, about 4 cables south-eastward, the coast forms a bay at the south-eastern 35 corner of which is the village of Capraia, with a small harbour at the south-western corner of the bay. The village, which in 1947 had a population of 341, stands at an elevation of about 300 feet (91^m4) close southward of Punta Ferraione. On its eastern side and near the coast is a prominent ancient fort, on the dark bastions of which is a yellow 40 building surmounted by a slender cylindrical column, which from a distance resembles a belfry. Northward of the village, between Punta Ferraione and a prominent light-coloured round tower, is the penal establishment.

A light is exhibited, at an elevation of 92 feet (28^m0), from a white 45 masonry hut, 26 feet (7^m9) in height, situated on Punta Ferraione.

Fishing nets.—Tunny fishing nets extend about half a cable eastward from the coast close to Punta del Porto Vecchio.

Porticciolo di Capraia. — Light. — Depths.—The small harbour of Capraia is formed by a L-shaped mole which extends about three- 50 quarters of a cable southward and westward from the western side of the bay, and by a jetty extending about half a cable north-eastward from the shore at the south-western corner of the bay. Vessels entering the harbour must pass at a distance of from 30 to 130 feet (9^m1 to 39^m6) from the head of the mole.

Charts 158, 1780, 2158a, 449.

Chart 1719, plan of Capraia island.

A light is exhibited at an elevation of 20 feet (6^m1) from an iron framework structure on a square masonry tower, 21 feet (6^m4) in height, situated on the head of the mole.

The angle between the inner and outer legs of the mole is filled by a rocky shoal and vessels securing their sterns to the mole must do so at a distance of from 35 to 40 feet (10^m7 to 12^m2) from its face. There are depths of more than 11 feet (3^m4) at a distance of 10 feet (3^m0) from the quay on the north-western side of the harbour. During fresh north-westerly winds, squalls from the mountains blow across the harbour in varying directions.

Port facilities.—Small quantities of fresh provisions and of fresh water are available.

There is a landing place for boats, protected by a short breakwater, situated on the eastern shore of the bay close southward of the light-coloured round tower, but in bad weather it is preferable to land in the harbour.

There is regular sea communication with Livorno and with other islands in Arcipelago Toscano.

Submarine telegraph cable.—A submarine telegraph cable which connects Isola Capraia with Isola d'Elba is landed in the vicinity of Punta Ferraione (*Lat. 43° 03' N., Long. 9° 51' E.*).

Coast.—From Punta Ferraione, the eastern coast trends southward for about 1½ miles to Punta della Civitata and is bare, rocky and moderately steep-to. Forte di Capraia, situated on a rocky spur overlooking the bare coast, stands about a quarter of a mile southward of Punta Ferraione; southward of this fort, the remains of a wall, running from a high masonry guardhouse to the water's edge, may be distinguished.

From Punta della Civitata, the coast trends about 2 miles south-westward to Punta dello Zenobito, the southern extremity of the island. There are two bights in the northern part of this stretch, Cala Ceppo (Coppo), close south-westward of Punta della Civitata, and La Carbicina, about 3½ cables farther south-westward. Lo Scoglione, an above-water rock, lies about one mile south-westward of Punta della Civitata and about half a cable offshore.

Punta dello Zenobito may be identified by a circular tower standing on the point above a ridge of light-coloured rock at an elevation of 272 feet (82^m9); when seen from south-eastward, the cliffs north-eastward of the tower have a pronounced reddish colour.

Western side of the island.—**Coast.**—**Light.**—From Punta della Teia, the western coast of the island trends about 1½ miles south-westward to Punta della Manza, and thence about 2 miles southward to Punta del Trattoio (Trattojo), the western extremity of the island. An above-water rock lies close off Punta della Manza, and Scoglio del Rucciso, a similar rock, lies close inshore about three-quarters of a mile farther southward. Isolotto La Praiola, a high rounded islet, connected with the coast by a ridge of rocks, lies about 6 cables southward of Scoglio del Rucciso and about half a mile north-north-eastward of Punta del Trattoio.

A light is exhibited, at an elevation of 492 feet (150^m0), from a black, square iron tower, surmounted by a white framework structure, 31 feet (9^m4) in height, situated about a quarter of a cable within the extremity of Punta del Trattoio.

Charts 158, 1780, 2158a, 449.

Chart 1719, plan of Capraia island.

From Punta del Trattoio, the coast trends about one mile south-south-eastward to Punta delle Linguelle and thence about half a mile south-eastward to Punta dello Zenobito. Cala il Moreto (Mortelo 5 cove) is entered between Punta delle Linguelle and Punta dello Zenobito; it affords temporary anchorage in depths of about $6\frac{1}{2}$ fathoms (11^m9), sand and weed, but its shores are rocky and inaccessible.

Chart 3905.

ISOLA D'ELBA.—General remarks.—Isola d'Elba is the 10 largest, richest and most beautiful island of Arcipelago Toscano. It is separated from the mainland of Italy by Canale di Piombino (page 292), and lies with Capo della Vita, its northern extremity, about 5 miles south-westward of Punta Falcone. It is about 16 miles long in a west-south-westerly direction between Capo Pero, its eastern extremity, 15 situated about 2 miles south-eastward of Capo della Vita, and Punta delle Pietre Albe, its western extremity. There are three distinct mountain ranges in the island, the westernmost and highest culminating in Monte Capanne, 3,343 feet ($1,018^m9$) high, about 3 miles eastward of Punta delle Pietre Albe (*Lat.* $42^\circ 46' N.$, *Long.* $10^\circ 06' E.$). 20 The western coast is steep, rocky and devoid of harbours, but the remaining coasts are deeply indented with numerous bays, frequently utilised by vessels overtaken by strong northerly winds in Golfe di Genova. The northern and eastern coasts present a well-cultivated and pleasing appearance while the western and southern coasts are 25 steeper and more rugged.

Local magnetic anomalies.—Local magnetic anomalies are frequently encountered off the coasts of Isola d'Elba, especially when approaching the island from north-eastward.

Charts 3905 and 3906.

30 **NORTHERN AND WESTERN COASTS.—Coast.—Danger.**
—**Signal station.**—From Capo della Vita, the northern coast trends south-south-westward for about 4 miles to Punta Falconaia and is high, rocky and broken but clear of dangers and steep to about one cable offshore. This stretch of coast is dominated by Monte Grosso, 35 which attains an elevation of 1,138 feet (346^m9) close within the coast about $1\frac{1}{2}$ miles south-south-westward of Capo della Vita; a conspicuous obelisk stands about half-way up the northern slopes of this mountain and Volterraio, an ancient castle standing on a peak 1,293 feet (394^m1) high, about $1\frac{1}{2}$ miles south-eastward of Punta Falconaia, is 40 also prominent. See view facing page 308.

A small shoal with a depth of 19 feet (5^m8), rock, over it, lies about $6\frac{1}{2}$ cables northward of Capo della Vita.

A signal station, consisting of a building painted in black and white chequers, stands on Monte Grosso. Storm warning signals are displayed, 45 see page 11. Three yellow huts with red roofs stand close to the signal station.

*Chart 1719, plan of Port Ferrajo.***RADA DI PORTOFERRAIO AND APPROACHES.—Light.**—

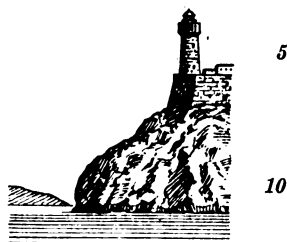
Rada di Portoferraio is entered between Punta Falconaia and Punta 50 Falcone, the northern extremity of a peninsula about $1\frac{1}{2}$ miles westward, on which stands the town of Portoferraio. There are depths

Charts 3905, 3901, 158, 1780, 2158a, 449.

Chart 1719, plan of Port Ferrajo.

of from 14 to 22 fathoms (25^m6 to 40^m2) at the entrance, gradually decreasing within, and the roadstead affords anchorage to vessels of all sizes.

Portoferraio light is exhibited, at an elevation of 206 feet (62^m8), from a white conical tower, 83 feet (25^m3) in height, situated on the north-eastern bastion of Forte Stella at the north-eastern extremity of the town and about one cable south-eastward of Punta Falcone.



Portoferraio light-structure.

Island and dangers in approach.—

Light.—Buoy.—Lo Scoglietto (*Lat.* 42° 50' N., *Long.* 10° 20' E.), a bare, rocky and



Lo Scoglietto light-tower.

blackish islet, lies about 6½ cables north-ward of Punta Falcone; it is 66 feet (20^m1) high and is surrounded by a shoal rocky bank extending about half a cable offshore.

A light is exhibited, at an elevation of 79 feet (24^m1), from a circular crenellated tower, attached to a yellow square dwelling, 26 feet (7^m9) in height, situated on the summit of Lo Scoglietto.

A spit of sand and rocks extends about three-quarters of a cable north-north-eastward of Punta Falcone. Capo Bianco, a steep point of moderate elevation, situated about three-quarters of a mile west-north-westward of Punta Falcone, has several white patches on it especially on its western side and is surmounted by a red house. Secca di Capo Bianco, a rocky spit with depths of less than 3 feet (0^m9) over it, extends about 3 cables north-north-eastward of Capo Bianco.

A black conical buoy surmounted by a sphere is moored about one cable north-north-eastward of the extremity of Secca di Capo Bianco; this buoy is liable to be washed away in bad weather.

Eastern and southern sides of Rada di Portoferraio.—Fishing nets.—From Punta Falconaia, the eastern side of the roadstead trends about 3¼ cables south-south-westward to Punta degli Scarpellini. Cala Bagnaia is entered between Punta degli Scarpellini and Punta Pina, about 2¼ cables southward; Tunny fishing nets extend about half a cable south-westward from both entrance points.

Between Punta Pina and Punta Ottone, about 4½ cables southward, the coast forms a bight called Cala Concia on the southern shore of which stands Villa Toscanelli, a prominent white house with a verandah, situated close within a beach on which is a landing pier. A sandy beach extends from Punta Ottone nearly as far as Punta Le Grotte, about 11½ cables westward; the middle part of this beach is called Lo Schiopparello, and is fronted by numerous rocks, both sunken and above-water.

Punta Le Grotte is covered with pine woods; about 5½ cables west-south-westward of the point are two conspicuous radio masts and Mibelli, a light-coloured windmill about 1½ cables eastward of the masts, is also prominent. Westward of Punta Le Grotte, the coast is flat and is covered with salt pans.

Between Punta Pina and Punta Le Grotte, the eastern and southern

Charts 3905, 3901, 158, 1780, 215&a, 449.

Chart 1719, plan of Port Ferrajo.

shores of the roadstead are fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends as much as 3½ cables offshore in places.

- 5 **Western side of Rada di Portoferraio.—Piers.**—From Punta Falcone, the western side of the roadstead trends south-eastward and then south-south-westward for about 4 cables to Punta del Torrione. This latter point is the extremity of a tongue of land, named Linguella, which extends south-westward from the town of Portoferraio and
10 forms the south-eastern side of La Darsena, a basin which forms the harbour. Il Torrione, a large, circular, reddish-coloured tower, is situated on the western side of Punta del Torrione and at the eastern entrance point of La Darsena.

The large iron works of Alti Forni, which has been shut down since
15 1945, stands, with conspicuous twin chimneys, at the head of Seno del Ponticello, about 4 cables westward of Punta del Torrione. Four piers extend in an east-south-easterly direction from the shore fronting the iron works; Pontile Hennin, the northernmost and largest of these piers, lies with its head about 1½ cables westward of Il Torrione.

- 20 **Freno channel.—Light-buoy.**—A bar with depths of from 3 to 5 fathoms (5^m5 to 9^m1) over it connects Punta del Torrione with Punta Le Grotte (*Lat. 42° 48' N., Long. 10° 20' E.*) and obstructs access to the western part of the roadstead. A channel named Freno, with depths of not less than 5 fathoms (9^m1) and about 80 yards (73^m2)
25 wide, has been dredged across the bar about three-quarters of a cable southward of Punta del Torrione and leads to Ancoraggio della Fossa, an anchorage with depths of from 5 to 8 fathoms (9^m1 to 14^m6).

A light-buoy, painted red and exhibiting a *red flashing* light, showing a *short flash every two seconds*, is moored about 1½ cables south-eastward
30 of Punta del Torrione; this light-buoy should be left on the port hand by vessels making for Freno channel.

- Pilotage.**—There are several pilots; pilotage although advisable is not compulsory. The pilotage area of the roadstead is that area eastward of a line joining Punta Le Grotte and Punta del Torrione;
35 that of the port is the area westward of that line.

Anchorage.—The two best anchorages in the outer part of the roadstead are known as the eastern and the western anchorage. The eastern anchorage is in depths of 10 fathoms (18^m3), soft mud, with the northernmost tower of the iron works bearing 289° and in line with the
40 white summit of Monte Bello, and the ruins of Santa Lucia bearing 237° and just open eastward of Punta Le Grotte. Monte Bello (chart 3905) is a bare, isolated and conical hill, 384 feet (117^m0) high, situated near the coast about 1½ miles west-north-westward of Il Torrione; Santa Lucia (chart 3905) stands at an elevation of 777 feet (236^m8),
45 on a bare peak about 1½ miles south-westward of Punta Le Grotte.

The western anchorage is in depths of 8 to 9 fathoms (14^m6 to 16^m5), soft mud, with the southern side of Il Torrione bearing 302° and in line with the northern edge of Forte Inglese and Portoferraio light-structure bearing 000°. Forte Inglese stands at an elevation of
50 194 feet (59^m1) about 5½ cables west-north-westward of Il Torrione.

At both of the above-mentioned anchorages the holding ground is not good, and with strong south-easterly winds which, in this locality, are common in winter, vessels are liable to drag even with two anchors down.

Charts 3905, 3901, 158, 1780, 2158a, 449.

Chart 1719, plan of Port Ferrajo.

On the approach of south-easterly winds the mountains around Rada di Portoferraio often become covered with cloud, and these winds are likely to blow strongly if the water level in the port rises and remains above normal.

There is excellent anchorage in Ancoraggio della Fossa, in depths of 8 fathoms (14^m6), with the northernmost tower of the iron works bearing 325° and in line with the south-western corner of Forte Inglese, and a mole at the head of La Darsena bearing 041°.

There are numerous mooring buoys in the vicinity of Ancoraggio della Fossa.

Directions.—Caution.—Approaching from westward, the town of Portoferraio is not visible, but Forte Falcone and Forte Stella with Portoferraio light-structure will be distinguished and the twin chimneys of Alti Forni will be seen over a low part of the peninsula. On the eastern side of the roadstead, the ancient castle of Volterraio (page 298) may be identified. If passing between Lo Scoglietto and the coast, vessels should steer 095° to pass not less than half a cable southward of Lo Scoglietto in order to be well clear northward of Secca di Capo Bianco. On a dark night, Isolotto Palmaiola light is a useful guide for passing northward of Lo Scoglietto; by keeping the light in sight (it is not obscured by land until bearing less than 095°), until Portoferraio light bears 180°, when course may be shaped southward for the roadstead, vessels will be well clear of danger.

If proceeding to Ancoraggio della Fossa, after passing close north-westward of the light-buoy moored about 1½ cables south-eastward of Punta del Torrione (*Lat. 42° 49' N., Long. 10° 20' E.*), vessels should keep the southern edge of Pontile Hennin in Seno del Ponticello, bearing 291°, which leads in depths of not less than 5 fathoms (9^m1) in Freno dredged channel; when abreast Il Torrione, course should be altered southward to bring the mole at the head of La Darsena bearing 041° astern, anchoring when the northernmost tower of Alti Forni comes in line with the south-western corner of Forte Inglese, bearing 325°.

Pontile Hennin suffered extensive damage during hostilities, and in 1948 it was reported that only the head of the pier remained.

La Darsena.—Lights.—Depths.—La Darsena is a rectangular basin, open south-westward and lined with quays. It is about 800 feet (243^m8) long and 650 feet (198^m2) wide and its head and north-western side are surrounded by the houses of the town of Portoferraio; its south-eastern side is formed by Linguella. It is entered between the south-western extremity of Linguella and the head of Moletto della Sanità or del Gallo, about 400 feet (121^m9) north-westward.

Two lights, disposed vertically, are exhibited at an elevation of 18 feet (5^m5) from a concrete post, 13 feet (4^m0) in height, situated on the eastern entrance point of La Darsena, close north-westward of Il Torrione.

Two lights, disposed vertically, are exhibited at an elevation of 18 feet (5^m5), from an iron bracket on the side of a tower at the head of Moletto della Sanità, on the western entrance point of La Darsena.

A bank on which there are depths of less than 6 feet (1^m8) fringes Linguella and extends about half a cable south-westward and westward of Punta del Torrione; the light on the head of Moletto della Sanità is obscured over this bank when bearing less than 320°.

Charts 3905, 3901, 158, 1780, 2158a, 449.

Chart 1719, plan of Port Ferrajo.

A mole projects about a quarter of a cable from the head of La Darsena and is reserved for berthing mail steamers. Two buoys are moored close off the mole for the use of vessels berthing alongside it. Small vessels berth with their sterns secured to the quay on the north-western side of the basin, and small craft are also berthed close together at the northern end of the quay on the south-eastern side of the basin over a distance of about 55 yards (50^m3) from its head.

There are depths of from 3 to 7 fathoms (5^m5 to 12^m8) in the middle of the basin, decreasing towards the quays, alongside which there are depths of about 10 feet (3^m0), with depths of from 16 to 18 feet (4^m9 to 5^m5) close off them.

The quays were extensively damaged during hostilities, and in 1948 it was reported that berthing was only possible at the mole at the head of the basin and at the southern end of the quay on the north-western side, over a distance of about half a cable from the root of Moletto della Sanità. Small craft can berth on either side of the mole at the head of the basin and vessels up to 600 tons can berth stern-on to the head of this mole, dropping an anchor in the middle of the entrance to the basin.

Seno del Ponticello.—Piers and quays.—Depths.—Seno del Ponticello, the bight on the western side of the entrance to La Darsena, is lined with quays which extend from the root of Moletto della Sanità to the southernmost of the four piers extending from abreast Alti Forni. Pontile Hennin, the northernmost pier, is about 130 yards (118^m9) long and is connected with Alti Forni works by a framework bridge; there are depths of from 29 to 31 feet (8^m8 to 9^m4) alongside its outer part. The southernmost pier extends about half a cable offshore and has depths of from 20 to 23 feet (6^m1 to 7^m0) alongside its outer part. The two middle piers are about 77 yards (70^m4) long with depths of from 17 to 22 feet (5^m2 to 6^m8) alongside their heads.

There are depths of from 16 to 29 feet (4^m9 to 8^m8) at a distance of about 100 feet (30^m5) from the quays lining the northern part of Seno del Ponticello between the root of Pontile Hennin and Moletto della Sanità (*Lat.* 42° 49' N., *Long.* 10° 20' E.).

The quays and piers in Seno del Ponticello were extensively damaged during hostilities. In 1948, it was reported that berthing was possible only at the southern side of Moletto della Sanità and Calata Mazzini, a quay extending about three-quarters of a cable westward from the root of Moletto della Sanità; vessels of a draught of less than 16 feet (4^m9) could berth stern-on to these two quays. Of the four piers, Pontile Hennin was destroyed except for the head which was encumbered with the remains of cranes; the northern of the two central piers was intact and in working order but the other was not usable; and the southernmost pier had been repaired and was accessible to small vessels.

Town.—Port facilities.—The town of Portoferraio, built on the southern slopes of the peninsula, is surrounded by walls and is dominated by Forte Falcone and Forte Stella; in 1947, the population was 11,650. There is a hospital of moderate size which receives seamen.

Small quantities of provisions may be obtained. Fresh water is scarce, but in winter only, small quantities may be obtained at the mole at the head of La Darsena.

Repairs to small craft can be undertaken. There is a slipway

Charts 3905, 3901, 158, 1780, 2158a, 449.

Chart 1719, plan of Port Ferrajo.

capable of taking vessels up to 100 feet (30^m5) in length, situated on the northern side of Seno del Ponticello.

In 1948, most of the cargo working appliances were out of action owing to war damage. 5

There is daily sea communication with Portovecchio di Piombino and regular sea communication with Livorno and with other islands of Arcipelago Toscano.

Chart 3905.

NORTHERN AND WESTERN COASTS (*continued*).—**Coast.**— 10
Danger.—Anchorage.—From Capo Bianco, the coast trends west-north-westward for about 2½ miles to Capo d'Enfola. About midway along this stretch of coast is Punta d'Acquaviva, close to which is a cove of the same name. This cove, which has a beach at its head, is entered between two rocky, light-coloured points, off which are some 15
detached rocks.

Secca di Santa Lucia, a rock over which is a depth of 5½ fathoms (9^m6), lies about 6 cables west-north-westward of Capo Bianco and about 4 cables offshore.

Capo d'Enfola is the north-western extremity of a peninsula which 20
rises to a conical hill, 443 feet (135^m0) high, which is connected with the mainland by a low isthmus; the upper part of this hill is covered with vegetation while its sides are bare, steep and rocky. The large shed and house of a tunny fishery establishment are situated on the north-eastern side of the isthmus. 25

Scoglio La Nave, a bare conical rock, lies close north-westward of Capo d'Enfola; Scoglio di Mezzogiorno, a white rock similar in shape and height to Scoglio La Nave, lies close off the south-western extremity of the peninsula, about 3½ cables southward of Capo d'Enfola.

Golfo di Viticcio is entered between the coast abreast of Scoglio di 30
Mezzogiorno and Punta Penisola, a rocky, bare and light-coloured point about 7 cables southward. The village of Viticcio, consisting of a group of reddish-coloured houses, stands at the south-eastern corner of the gulf.

Vessels may obtain temporary anchorage off a beach on the southern 35
side of the isthmus connecting Capo d'Enfola (*Lat.* 42° 50' N., *Long.* 10° 16' E.) with the mainland, where there are depths of 5½ fathoms (10^m1) shoaling rapidly to 3 fathoms (5^m5), about one cable offshore. The bottom is rock and weed.

Golfo della Biodola is entered between Punta Penisola and a rounded 40
promontory about one mile south-westward; the latter promontory is fronted by a rocky bank which extends about 2 cables offshore. The village of Biodola is situated at the head, and the village of Scaglieri lies at the north-eastern corner, of the gulf. Golfo della Biodola is little frequented. 45

Golfo di Procchio is entered between the rounded promontory and Punta Schioppo, about 1½ miles westward. At the eastern corner of this gulf is a wide sandy beach, entered between two points of about equal elevation; the north-eastern point is yellowish, bare and rocky and is surmounted by a yellow, square and isolated house. Punta 50
Agnone, the south-western point, has its upper part covered with vegetation and its lower part bare and rocky. Scattered houses are dotted along the green slopes within the beach. The village of Bagno,

Charts 3901, 158, 1780, 2158a, 449.

Chart 3905.

situated on the western shore of the gulf, about 4 cables south-south-eastward of Punta Schioppo, consists of a group of houses near a dark, rocky promontory, on which there is a windmill and a chimney.

- 5 There is anchorage off the beach in the eastern corner of Golfo di Procchio, in depths of about 13 fathoms (23^m8), sand, with the yellow, square house on the yellowish point bearing 090°, and Punta Agnone bearing 200°.

Fishing nets.—Tunny nets are laid close eastward of Capo d'Enfola, 10 extending about 3½ cables in a northerly direction, and about 2 cables eastward of the same point, extending about half a cable northward ; in Golfo di Viticcio, extending about half a cable southward from the southern extremity of Capo d'Enfola peninsula, and about half a cable northward from Punta Penisola ; and in Golfo di Procchio, extending 15 about 3½ cables north-north-eastward from the coast near Bagno, and about 1½ cables northward from Punta Rognosi, situated about 3½ cables south-eastward of Bagno.

Marciana Marina.—**Light.**—The village of Marciana Marina is situated about 6 cables north-westward of Punta Schioppo. It 20 extends along the coast westward of a hill, 387 feet (118^m0) high, on which stands Villetta Anselmi, close northward of a clump of trees. At the western end of the village is Torre Medicea, a white circular tower, situated on the extremity of a low rocky point from which a short mole extends eastward and south-eastward.

- 25 A light is exhibited, from an iron post, situated near the root of the mole at Marciana Marina.

Marciana Castello and Poggio are two villages, situated at elevations of 1,230 and 1,148 feet (374^m9 and 349^m9), respectively, on two green hills about 1½ miles south-westward of Marciana Marina ; the former 30 village may be identified by a belfry south-eastward of it and the latter resembles a pyramid with a belfry at the apex.

A small landing pier with a depth of about 10 feet (3^m0) alongside its head extends about 115 feet (35^m0) north-north-eastward from the coast about 3 cables south-eastward of Torre Medicea (*Lat.* 42° 49' N., 35 *Long.* 10° 12' E.).

There is regular sea communication with Portoferraio and with other islands of Arcipelago Toscano.

Telegraph cable.—**Beacons.**—A submarine telegraph cable is landed westward of Torre Medicea ; its direction is indicated by the 40 alignment of two beacons. Anchorage is prohibited off the coast westward of the tower, *see* page 17.

Danger zone.—Rifle practice sometimes takes place from near Torre Medicea. During such practice, a white flag with a red disc in the centre is displayed from a flagstaff on the tower ; at such times, 45 a good berth should be given to the coast between the tower and Punta del Nasuto, about 4 cables west-north-westward.

Coast. — **Dangers.** — **Light.** — **Signal station.** — The north-western and western coasts of Isola d'Elba are high and rocky with no indentations of importance and practically no features of note. From 50 Punta del Nasuto, the coast trends about 2 miles westward to Capo Sant' Andrea, a rugged but not a very prominent point, and thence about 9 cables west-south-westward to Punta della Zanca. About 3 cables north-eastward of the latter point and about 1½ cables offshore is Formiche della Zanca, a group of four rocks the outermost of which

Chart 3905.

is plainly visible above water. The middle rock shows a black head and the two inner rocks are awash; the sea often breaks over the group.

Punta Polveraia, sometimes called Punta Forana, a perpendicular headland surmounted by the white building of a light-structure, is situated about three-quarters of a mile south-westward of Punta della Zanca. 5

A light is exhibited, at an elevation of 171 feet (52^m1), from a white octagonal tower attached to a one-storeyed dwelling, 33 feet (10^m1) in height, situated on Punta Polveraia.

Between Punta Polveraia and Punta Fornace, about 2½ cables south-south-westward, is a small sandy beach on which are some fishermen's huts with a small settlement named Pratesi, on the slopes backing the beach. Punta del Colle d'Orano lies about 3 cables southward of Punta Fornace; a 6-foot (1^m8) rocky patch, surrounded by depths of over 5 fathoms (9^m1), lies about 1¼ cables north-westward of Punta del Colle d'Orano.



Punta Polveraia light-tower.

Punta delle Pietre Albe, the western extremity of Isola d'Elba, lies about 1¼ miles southward of Punta del Colle d'Orano, and may be identified by several light-coloured rocky patches on it. 25

A signal station, consisting of a long, low building, painted in black and white chequers, is situated at an elevation of 1,968 feet (599^m8), on the flattish summit of Campo alle Serre Alto, about 8 cables north-eastward of Punta delle Pietre Albe. Storm warning signals are displayed, *see* page 11. 30

From Punta delle Pietre Albe, the coast trends about 1½ miles south-south-eastward to Capo Pomonte. Scoglio Oglieria, an above-water rock, lies about one cable southward of Capo Pomonte and about the same distance offshore. The villages of Chiessi and Pomonte are situated on this stretch of coast, the former at the head of a small bight about 6 cables south-eastward of Punta delle Pietre Albe, and the latter close northward of Capo Pomonte. Small vessels with local knowledge may obtain temporary anchorage, in depths of about 6 fathoms (11^m0), about 1¼ cables offshore abreast Chiessi, with Scoglio Oglieria in line with Punta della Testa, a small point about 4 cables north-north-westward of Capo Pomonte. 35 40

From Capo Pomonte (*Lat.* 42° 45' N., *Long.* 10° 07' E.), the coast trends about one mile south-eastward to Punta del Giardino, a point fringed with above-water and sunken rocks extending about one cable offshore, and thence trends west-south-westward for about a similar distance to Punta di Fetovaia. This latter point is the extremity of a narrow peninsula like an enormous mole, which projects about half a mile south-eastward from the adjoining coast. It is 121 feet (36^m9) high, with dark, bare and rocky sides and a flattish top on which are some grassy patches. 45 50

Charts 3905 and 3906.

**EASTERN AND SOUTHERN COASTS.—Coast.—Anchor-
age.**—From Capo della Vita (page 298), the eastern coast of Isola

Charts 158, 1780, 2158a, 449.

Charts 3905 and 3906.

d'Elba trends about 6 cables south-eastward to Capo Castello, a prominent, rounded headland on which are several villas. Isolotto dei Topi, 111 feet (33^m8) high, lies about 1½ cables northward of Capo Castello; there are depths of from 8 to 10 fathoms (14^m6 to 18^m3) close northward and eastward of the islet, and of 3½ fathoms (6^m4) in the passage between the islet and the cape.

Between Capo Castello and Punta Castelluccio, about 8 cables south-eastward, the coast forms a bay with a sandy beach at the head of which is the village of Cavo. Villa Tonietti, a light-coloured building on a rocky point in the northern part of the bay, about one cable south-westward of Capo Castello, is prominent, and on the northern slopes of Monte Grosso (page 298), about 4 cables westward of the villa, is a grey granite obelisk, which is the dominating feature of this stretch of coast.

On the coast abreast Cavo is a small harbour, formed by a stone jetty extending about a quarter of a cable north-eastward, and by a L-shaped mole extending north-eastward and then north-westward for about three-quarters of a cable; there are some sunken rocks with depths of about 3 or 4 feet (0^m9 or 1^m2) over them, alongside the southern side of the mole, inshore of which is an area with depths of about 10 feet (3^m0), which is used by boats and small fishing craft. Two iron piers, with depths of from 11 to 13 feet (3^m4 to 4^m0) alongside their heads, project about a quarter of a cable north-north-eastward from the beach about half a cable south-eastward of the root of the mole.

There is anchorage, in depths of about 8 fathoms (14^m6), mud, with Monte Grosso signal station (page 298) bearing 241° and the western extremity of Isolotto dei Topi bearing about 338° and just open eastward of Capo Castello. Small vessels, approaching closer inshore, must bear in mind that the depths here are very irregular.

From Punta Castelluccio, the coast trends south-eastward for about 7 cables to Capo Pero, a steep and rocky point surmounted by a yellow house with a crenellated wall in front of it; the reddish-brown colour of the coast is a distinctive feature of this stretch. A small bank, with a least depth of 7 fathoms (12^m8) over it, lies about half a mile eastward of Capo Pero.

Submarine telegraph cable.—A telegraph cable is landed about half a mile north-westward of Capo Pero.

Coast.—Piers.—Anchorage.—From Capo Pero, the coast trends south-south-westward for about 1½ miles to Miniera di Vigneria. Torre Giove, a massive, rectangular tower standing on a conical peak, 1,155 feet (352^m0) high, about 1½ miles south-westward of Capo Pero and about half a mile inland, is the best landmark on the eastern coast of Isola d'Elba and is visible throughout Canale di Piombino. When seen from eastward, the tower appears to have a hole in the middle.

Between Capo Pero (*Lat.* 42° 51' N., *Long.* 10° 27' E.) and Miniera di Vigneria are several piers at which vessels load mineral ore. The most important of these piers are:—Pontile di Rio Albano, an iron pier about three-quarters of a cable long, with depths of 33 feet (10^m1) alongside its head, situated about 6 cables south-south-westward of Capo Pero and close northward of the mouth of Rio Albano; Pontile di Portello, about 1½ cables long, also with depths of 33 feet (10^m1) alongside its head, situated about 8 cables south-south-westward of

Charts 3905 and 3906.

Pontile di Rio Albano ; and two small piers, situated, respectively, about half a cable northward, and three-quarters of a cable southward, of Pontile di Rio Albano. The northern of these two last-mentioned piers is of wood and iron and has depths of 14 feet (4^m3) alongside its head ; the other pier is of iron and has depths of 20 feet (6^m1) alongside its head. Mooring or warping buoys lie off the heads of all these piers, and each of them is served by an overhead cableway. 5

There are two piers abreast Miniera di Vigneria, about 3 cables south-south-westward of Pontile di Portello. The northern pier is a metal framework structure about half a cable long, with depths of 26 feet (7^m9) alongside its head and some mooring buoys close off it ; the southern pier, a wooden structure about 200 feet (61^m0) long, has depths of 17 feet (5^m2) alongside its head ; in 1947, it was reported that this pier was partially destroyed. 10 15

There is anchorage in depths of about 11 fathoms (20^m1), about 2 cables east-north-eastward of the head of the northern pier at Miniera di Vigneria (*Lat.* 42° 49' N., *Long.* 10° 26' E.).

Rio Marina. — Harbour. — Light. — Beacon. — The town of Rio Marina, which in 1947 had a population of 2,920, lies at the foot of some mountains of a deep reddish colour, about 3 cables south-south-westward of Miniera di Vigneria ; from seaward, the town of Rio dell' Elba can be seen on the slopes of these mountains, about one mile westward of Rio Marina. Owing to the adjacent mines, a great many small craft call here to load mineral ore and it is the principal exporting port on the island. 20 25

A tall and massive octagonal tower, surmounted by a square clock-tower of modern construction with the clock facing seaward, stands on the coast at the southern end of the town, and an ancient circular building is situated on the slopes high above the town. 30

About one cable eastward of the coast abreast the town is a rock named Scoglietto which is connected with the mainland. Banchina dei Voltoni, a quayed stone jetty, on which are numerous warehouses, extends eastward from the coast close northward of the tower at the southern end of the town ; the southern side of this jetty is silted up by the deposit brought down by Torrente Riale, which enters the sea on its southern side. From the head of Banchina dei Voltoni, a mole extends about half a cable eastward, thence turning north-north-eastward and connecting with Scoglietto. A jetty extends about 30 yards (27^m4) north-north-westward from the north-western side of Scoglietto and is connected with the mole by a quay. 35 40

A light is exhibited, at an elevation of 48 feet (14^m6), from a light-grey hexagonal stone tower, with a crenellated cornice, 13 feet (4^m0) in height, situated on the summit of Scoglietto. 45

A rock, awash, marked by a small iron beacon, lies 175 feet (53^m4) westward of the light-structure ; boats can pass on either side of this rock. 50



Rio Marina light-structure.

Depths. — Piers. — In 1947 there were general depths of about 13 feet (4^m0) in the middle of the small harbour, but caution is necessary as the harbour is subject to silting.

Charts 158, 1780, 2158a, 449.

Charts 3905 and 3906.

A strongly built pier of wood and iron extends 311 feet (94^m8) from the western side of the harbour about half a cable northward of the root of Banchina dei Voltoni (*Lat.* 42° 49' N., *Long.* 10° 26' E.); there are depths of 10 feet (3^m0) alongside its head and the pier is used by vessels loading mineral ore. Another pier extends about 216 feet (65^m8) from the coast about 1½ cables northward of the root of Banchina dei Voltoni.

Anchorage.—Vessels waiting to load mineral ore from the piers at Rio Marina anchor north-north-eastward of Scoglietto, in depths of about 16 fathoms (29^m3).

Port facilities.—Small quantities of provisions may be obtained. Water is laid on to Banchina dei Voltoni and a limited quantity may generally be obtained on request.

There are numerous lighters and a few tugs in the port.

There is regular sea communication with Portoferraio, Portovecchio di Piombino and with other Italian ports.

Coast.—From the mouth of Torrente Riale, the coast trends south-south-eastward for about one mile to Capo Ortano and thence southward for about 1½ miles to Capo d'Arco; both these capes are steep and rocky and may be closely approached in safety. There is a prominent radio mast on the summit of a hill about 2 cables west-south-westward of Capo Ortano.

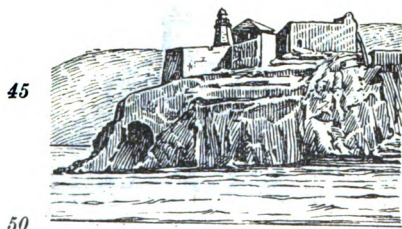
Isolotto d'Ortano, 79 feet (24^m1) high, with a rounded green summit and bare rocky sides, is connected with the coast about half a mile southward of Capo Ortano by a rocky ridge. A short wooden pier for loading mineral ore projects from the head of a bay close north-westward of Isolotto d'Ortano and there is a similar pier about 3 cables northward of Capo d'Arco.

From Capo d'Arco, the coast trends west-south-westward for about one mile to Capo Bianco, a point so-named on account of some whitish patches low down on it. A pier for loading mineral ore extends from a small rocky point about 3 cables north-north-eastward of the cape; a yellow, isolated house stands on this rocky point.

Chart 1719, *plan of Port Azzurro.*

Golfo di Porto Azzurro.—**Light.**—Golfo di Porto Azzurro is entered between Punta San Vincenzo, the south-eastern extremity of a promontory situated about 4 cables south-westward of Capo Bianco, and Capo Focardo, about 6 cables south-south-eastward. Punta San Vincenzo is dominated by a large citadel containing several prominent

buildings including a penal establishment and a church with a belfry. A conspicuous iron cross stands at an elevation of 951 feet (289^m9) on the summit of Monte Mar di Capanna, a steep rocky peak about one mile north-westward of Punta San Vincenzo. Monte Castello, 1,279 feet (389^m8) high and surmounted by a square pillar, is the higher of two rounded peaks which rise about half a mile north-westward of Monte Mar di Capanna. On the southern side of the gulf, the village of Capoliveri can be seen on the crest of a hill



Capo Focardo light-tower.

Charts 3905, 3906, 158, 1780, 2158a, 449.



Volterraio, bearing 180°, distant 3·5 miles.

Isola d'Elba; northern coast.

(Original dated 1921.)



Volterraio.

Golfo Stella from south-westward.

(Original dated 1921.)



*La Scola.
Il Marzocco.*

Isola di Pianosa; eastern coast.

(Original dated 1905.)

Chart 1719, plan of Port Azzurro.

about $1\frac{1}{2}$ miles west-south-westward of Capo Focardo. At the head of the gulf is beach named Spiaggia di Mola, which can only be approached in small boats.

A light is exhibited, at an elevation of 105 feet (32^m0), from a red, 5
octagonal, stone tower on the wall of an old fort, 21 feet (6^m1) in height,
situated on Capo Focardo (*Lat.* 42° 45' N., *Long.* 10° 25' E.).

Harbour.—Quayage.—Lights.—On the western side of the promontory containing the citadel is a cove which is entered between a point about $3\frac{1}{2}$ cables westward of Punta San Vincenzo, and Punta San 10
Giovanni, about $1\frac{1}{2}$ cables west-south-westward; the town of Porto Azzurro lies stretched along a beach at the head of this cove. A quayed mole, with depths of 26 feet (7^m9) alongside its head, extends about half a cable west-south-westward from the eastern entrance point of the cove, and the eastern shore of the cove between the root of the 15
mole and the beach at the head of the cove, is lined by a quay suitable for berthing small fishing craft and boats. A mooring buoy for the use of the mail steamer is moored in the cove.

Both the mole and the quays were extensively damaged during hostilities, and in 1947 it was not possible to berth alongside them. 20
Vessels up to about 700 tons could be berthed end-on at the mole, but it should be borne in mind that the berthing area northward of the mole is nearly always occupied by fishing vessels and small coasting craft.

A light is exhibited, at an elevation of 21 feet (6^m4), from a circular, iron structure, 15 feet (4^m6) in height, situated on the head of the 25
mole.

A light is exhibited, at an elevation of 46 feet (14^m0), from a white, rectangular hut, 7 feet (2^m1) in height, situated on Punta San Giovanni.

Anchorage.—There is anchorage in depths of 8 fathoms (14^m6), mud, with Punta San Giovanni light-structure bearing 314° and Punta 30
San Vincenzo bearing 068°.

An abnormally high sea level, together with clouds covering the surrounding mountains, forecast strong south-easterly winds, even during apparently calm weather. During these winds, which often blow strongly in winter, small craft can anchor off Fontanella, a point 35
on which is a house sometimes used as a disinfecting station, situated on the southern side of the gulf about 3 cables southward of Punta San Giovanni, with that point bearing between 000° and 010°. There are depths of about $5\frac{1}{2}$ fathoms (10^m1) on a line joining Fontanella and Punta San Giovanni. 40

Town.—Port facilities.—The town of Porto Azzurro lies grouped around a prominent square clock tower at the head of the small cove forming the harbour; in 1947, the population was 2,429, mostly engaged in fishing, the preparation of sardines and anchovies and the production of wine. 45

Water is laid on to the quay at the mole; in 1947, the hydrant was out of action due to war damage.

There is regular sea communication between other ports in the island and with the mainland of Italy.

Coast.—Isolotto dei Liscoli, the upper part of which is covered with 50
bushes while the lower part is bare and shows white strata, lies close inshore about three-quarters of a mile south-eastward of Capo Focardo; the coast between the cape and the islet forms a bight in which there are depths of 3 fathoms (5^m5), rapidly increasing to 5 fathoms (9^m1)

Charts 3905, 3906, 158, 1780, 2158a, 449.

Chart 1719, plan of Port Azzurro.

about one cable offshore. Punta Nera lies about 4 cables south-eastward of Isolotto dei Liscoli.

Chart 3905.

- 5 From Punta Nera, the coast trends south-eastward for about half a mile to Capo Gardo, and thence southward for about 6 cables to Punta Bianca, and a further 8 cables southward to Punta Galera; all these points are steep and rocky and the coast between them is fringed with above-water and sunken rocks, but these all lie within a distance of
10 one cable offshore, in depths of less than 5 fathoms (9^m1). There is a small pier for loading mineral ore in a cove about a quarter of a mile northward of Punta Galera; the pier can be easily distinguished by the large, light-coloured heaps of excavated material on the hillside above it.
- 15 From Punta Galera (*Lat.* 42° 43' N., *Long.* 10° 26' E.), the coast trends about 4 cables south-westward to Punta dei Riparti, a high, steep and rocky point, dominated by Poggio Turco, a hill 615 feet (187^m1) high, which forms the southern extremity of Isola d'Elba. Close south-eastward of this point is an above-water rock and some
20 rocky patches fringe the coast westward of it, extending about half a cable offshore. Vessels from westward will sight and identify Torre Giove, described on page 306, immediately after passing Punta dei Riparti.

Between Punta dei Riparti and Capo della Calamita, about 1½ miles
25 westward, the coast forms a wide bight. Capo della Calamita is the southern extremity of a high, steep and rugged mountain block, composed of reddish-coloured rock, rich in iron ore; a prominent radio mast stands on Monte Calamita, about 1½ miles northward of the cape. Close westward of the cape is a stone jetty where small craft load iron
30 ore, and eastward of the cape is a landing pier which is connected with the end of a steep railway by an overhead cableway.

Scoglio Remaiolo, an above-water rock, lies about three-quarters of a mile eastward of Capo della Calamita and about 1½ cables offshore; there are depths of about 16 fathoms (29^m3) in mid-channel in the
35 passage between this rock and the coast.

From Capo della Calamita, the coast trends north-westward for about one mile to Isolotti Gemini.

Local magnetic anomaly.—A local magnetic anomaly of appreciable amount has been observed in the close vicinity of Capo della
40 Calamita.

Off-lying islets and rocks.—Isolotti Gemini are two islets lying on a bank on which there are depths of from 3 to 7 feet (0^m9 to 2^m1), which extends about 4 cables offshore. The outer islet is 138 feet (42^m1) high and conical in shape and lies about 2 cables offshore; the
45 inner islet, lying between the outer islet and the coast, is 75 feet (22^m9) high and comparatively narrow and elongated. Small above-water rocks lie between the two islets and southward of the outer islet.

Scoglietti Corbelli are a group of blackish, above-water rocks, situated about half a mile west-south-westward of the outer islet of
50 Isolotti Gemini, with depths of over 15 fathoms (29^m4) around the group. There are depths of from 16 to 26 fathoms (29^m3 to 47^m5) in the passage between Isolotti Gemini and Scoglietti Corbelli, which should only be used by small vessels with local knowledge.

Coast.—Anchorage.—Cala dell' Innamorata is a small cove

Chart 3905.

entered between the coast abreast Isolotti Gemini and Capo Francese, about half a mile north-north-westward. A large iron pier with a T-shaped head extends about three-quarters of a cable west-north-westward from the shore in the southern part of the cove, about 2 cables northward of the inner islet of Isolotti Gemini; there are several mooring and warping buoys close off the pier for the use of vessels loading iron ore. The cove is sheltered from southward by the shoal bank surrounding Isolotti Gemini.

The pier at Cala dell' Innamorata is the most important place for loading ore from the mines at Capo della Calamita. Vessels can anchor off the head of the pier, in depths of 14 fathoms (25^m6) weed, on a line joining the outer islet of Isolotti Gemini and Punta Morcone (*see below*).

Between Capo Francese and Punta Morcone, a rocky point about 4 cables north-westward, the coast forms a small bay.

Golfo Stella.—Anchorage.—Golfo Stella is entered between Punta Morcone and Capo della Stella (*Lat.* 42° 44' N., *Long.* 10° 19' E.), about 2 miles westward. Capo della Stella is the extremity of a long, narrow promontory, from 440 to 515 feet (134^m1 to 157^m0) high, which extends about 1½ miles southward from the adjoining coast. Isolotto Corbella, a bare blackish rock, with smaller rocks close around it, lies about one cable southward of Capo della Stella with no passage between the rock and the cape.

The eastern shore of the gulf is rocky, fringed with rocks close inshore and overlooked by the village of Capoliveri, situated about one mile north-north-eastward of Punta Morcone. The twin peaks of Monte Volterraio (page 298), with an ancient castle on the western peak, may also be distinguished, *see view facing page 308*.

Capo Pini, a small rocky projection, extends southward from the head of the gulf, about 1½ miles north-north-eastward of Capo della Stella; the ruins of an old barracks, not easily distinguished owing to their dark walls, stand on Capo Pini. Above-water rocks lie close offshore on both sides of the cape, and a rock with a depth of 6 feet (1^m8) over it lies about a quarter of a mile westward of the cape and about half a cable offshore.

Spiaggia del Margitore, a wide sandy beach, lies at the north-western corner of the gulf between 3 and 6 cables westward of Capo Pini; the land within the beach is well cultivated and dotted with numerous farmhouses.

Vessels with local knowledge may obtain anchorage in depths of about 6 fathoms (11^m0), sand, off Spiaggia del Margitore, with Capo Pini bearing 071°, distant about 3¼ cables.

Fishing nets.—Tunny fishing nets extend about half a cable eastward from the western shore of the gulf, about 8¼ cables northward of Capo della Stella, and nets also extend about half a cable south-eastward from about the middle of Spiaggia del Margitore.

Golfo dell' Acona.—Anchorage.—Golfo dell' Acona is entered between Capo della Stella and Capo Fonza, about 1½ miles westward; it is surrounded by high land and has rocky shores except at its head, where Spiaggia dell' Acona, a wide sandy beach, extends between the north-eastern corner of the gulf and Punta dell' Aconella, a low, dark and rocky point, fringed with detached rocks, situated about 6 cables westward. There is a small mole at the eastern end of Spiaggia dell' Acona.

Charts 158, 1780, 2158a, 449.

Chart 3905.

Vessels with local knowledge may obtain anchorage in good holding ground, off the eastern part of Spiaggia dell' Acona; there are depths of 3 fathoms (5^m5) about 2½ cables, and of 5½ fathoms (10^m1) about 5 2½ cables, off the beach.

Fishing nets.—Tunny fishing nets extend about half a cable westward from the eastern shore of Golfo dell' Acona, about half a mile northward of Capo della Stella.

Coast.—Off-lying dangers.—From Capo Fonza, the coast trends 10 westward for about three-quarters of a mile to Punta di Mele.

Secca di Capo Fonza, a rocky shoal over which there is a depth of 11 feet (3^m4), lies about a quarter of a mile south-south-westward of Capo Fonza, and about 2 cables offshore; there are depths of about 8 fathoms (14^m6) in the passage between the shoal and the coast.

15 Scoglio Triglia (*Lat. 42° 44' N., Long. 10° 16' E.*), a small, black, above-water rock, lies about 2½ cables southward of Punta di Mele. Depths of over 10 fathoms (18^m3) surround Scoglio Triglia except on its eastern side, where a rocky spit with depths of less than 6 feet (1^m8) over it extends about a quarter of a cable eastward; a 1½-fathom 20 (3^m2) rocky patch lies between Scoglio Triglia and the coast.

Capoliveri village bearing 077° and open southward of Capo della Stella leads southward of Secca di Capo Fonza and Scoglio Triglia, and both these dangers are covered by the *red* sector of Marina di Campo light (*see* below), between the bearings of 278° and 293°.

25 **Golfo di Campo.—Lights.—Quayage.—Anchorage.**—Golfo di Campo is entered between Punta di Mele and Capo di Poro, about 1½ miles west-south-westward. The village of Marina di Campo is situated on the western side of the gulf, northward of a rocky point on which a reddish, circular tower stands at an elevation of 112 feet (34^m1).

30 A light is exhibited, at an elevation of 131 feet (39^m1), from a reddish, circular tower, 31 feet (9^m4) in height, situated on a point close eastward of Marina di Campo.

A quayed mole extends 230 feet (70^m1) northward from the coast abreast the village; there are depths of 15 feet (4^m6) at its head, 35 decreasing to 7 feet (2^m1) at the root. A quay, with depths alongside of 7 feet (2^m1), extends about 111 feet (33^m8) westward from the root of the mole, and a small stone jetty and the remains of an old pier lie close north-westward of the western end of the quay.

In 1947, work was in progress extending the mole about 115 feet 40 (35^m1) northward and vessels should give the extension works a wide berth.

A light is exhibited, at an elevation of 20 feet (6^m1), from a concrete post, 15 feet (4^m6) in height, situated on the extremity of the extension.

The mole was extensively damaged during hostilities, and in 1947 45 it was reported that, owing to the presence of masonry blocks on the sea bed, the depths alongside the outer part of the mole had decreased from 15 to 10 feet (4^m6 to 3^m0).

Vessels may anchor at the head of the gulf in depths of about 7 fathoms (12^m8), with the reddish circular tower bearing 241°; at 50 night, vessels should anchor just within the southern limit of the *red* sector of Marina di Campo light bearing 293°, and vessels entering must keep the light bearing less than 341° which is the western limit of the *white* sector.

Port facilities.—Small quantities of fresh provisions may be

Charts 158, 1780, 2158a, 449.

Chart 3905.

obtained. Fresh water is available from a fountain situated near the root of the mole.

There is regular sea communication with Portoferraio and with the Italian mainland.

Coast.—Capo di Poro is steep, high and rocky; it is the eastern extremity of Monte Poro, the summit of which, 515 feet (157^m0) high, rises about 2 cables westward of the cape. From Capo di Poro, the coast trends about 3½ miles westward to Punta di Fetovaia (page 305). Spiaggia del Seccheto, at the head of a cove about 2½ miles westward 10 of Capo di Poro, is a beach from which granite from local quarries is shipped. Insenatura di Barbatoia (*Lat.* 42° 44' N., *Long.* 10° 09' E.), a small cove on the north-eastern side of Punta di Fetovaia, is about 1½ cables wide, with depths of 2½ fathoms (5^m0) at about one cable, and of 5½ fathoms (10^m1) at about 2½ cables, from the head of the 15 cove.

Submarine telegraph cable.—**Beacons.**—A submarine telegraph cable is landed in a cove about 2½ miles westward of Capo di Poro, and about a quarter of a mile eastward of Spiaggia del Seccheto; its direction is indicated by the alignment of two beacons. 20

Chart 1719, plan of Pianosa island.

ISOLA DI PIANOSA.—**Off-lying bank.**—Isola di Pianosa lies with Punta del Marchese, its northern extremity, about 7 miles south-south-westward of the south-western extremity of Isola d'Elba. In contrast to the other islands of Arcipelago Toscano, which are moun- 25 tainous, Isola di Pianosa is less than 100 feet (30^m5) high and flat, and, except for some buildings and slight undulations, presents a low and uniform appearance. There is a penal establishment on the island, the labour from which has cultivated large parts and constructed several roads. On account of the penal establishment, landing on the 30 island or anchoring off its coasts is prohibited except with permission of the local authorities.

A bank (chart 158), over which there is a least depth of 13 fathoms (23^m8), lies about 2½ miles north-north-westward of Punta del Marchese.

Punta del Marchese.—**Off-lying dangers.**—Punta del Marchese, 35 the northern extremity of the island, rises to a hill, 69 feet (21^m0) high, about a quarter of a mile south-eastward; Marchese farm, a prominent and isolated reddish-coloured building, stands on the summit of the hill.

Scoglio Scarpa, a blackish above-water rock, lies about 1½ cables northward of Punta del Marchese, and several rocky patches with 40 depths over them of from 3 feet to 2½ fathoms (0^m9 to 4^m1) lie within about 3½ cables northward and north-westward, and about 6 cables eastward, of that point, which should be given a wide berth.

Eastern side of the island.—**Coast.**—**Light.**—From Punta del Marchese, the eastern coast trends about half a mile south-eastward to 45 Punta del Grottone, the eastern extremity of Promontorio del Marchese, which forms the northern part of Isola di Pianosa. From Punta del Grottone, the rocky coast trends southward for about 1½ miles to Punta dei Bagni. Belvedere, a prominent circular building with two rows of arches, surmounted by a cupola and with a flagstaff close to it, 50 stands at an elevation of 95 feet (29^m0), about 1½ cables west-south-westward of Punta dei Bagni. A masonry obelisk, 46 feet (14^m0) in height, and painted in black and white horizontal bands, stands on the

Charts 158, 1131, 1780, 2158a, 449.

Chart 1719, plan of Pianosa island.

coast eastward of Belvedere ; in the sea in front of this obelisk are some submerged ancient Roman marble ruins, known as Bagni di Caligola.

Cala San Giovanni, a small bay with a fine white sandy beach at its head, is entered between Punta dei Bagni and a steep rocky point on which stands some barracks, about 4 cables south-eastward. The village of Pianosa (*Lat. 42° 35' N., Long. 10° 06' E.*) is situated at the head of the bay and from seaward presents a distinctive appearance with its buildings painted in various colours with battlements and arched windows.

10

15



Isola di Pianosa light-tower.

A light is exhibited, at an elevation of 140 feet (42^m7), from a tower on a white dwelling, 62 feet (18^m9) in height, situated about half a mile southward of Punta dei Bagni and close north-eastward of the penal establishment.

Harbour. — Lights. — Dangers. — Porticciolo di Pianosa, entered about three-quarters of a cable westward of the rocky south-eastern entrance point of Cala San Giovanni, is a small harbour available only to small craft with local knowledge. It has depths of from 5 to 7 feet (1^m5 to 2^m1) and is protected from northward by a small mole extending westward from the eastern entrance point.

A light is exhibited, at an elevation of 21 feet (6^m4), from an iron framework structure on a grey square metal hut, 16 feet (4^m9) in height, situated on the head of the mole.

A light is exhibited, at an elevation of 49 feet (14^m9), from the western side of the entrance to the harbour. Mariners must be careful not to mistake this light, which is privately maintained, for the light on the head of the mole.

A rough mole, mostly natural rock, but artificially completed in parts, extends about half a cable southward from the extremity of the south-eastern entrance point of Cala San Giovanni and encloses La Darsenetta, a small area in which there are depths of about one foot (0^m3) ; Il Marzocco, a peculiar rock shaped like an obelisk, stands at the southern extremity of this rough mole. *See view facing page 308.*

Secca San Giovanni, on which are some rocky heads, awash, on which the sea breaks, with depths of 7 feet (2^m1) between them, extends about 1½ cables east-north-eastward from the south-eastern entrance point of Cala San Giovanni ; a detached rocky patch, with depths of less than 6 feet (1^m8) over it, lies about a quarter of a cable eastward of the extremity of the shoal.

The obelisk close southward of Punta dei Bagni in line with Belvedere, bearing 267°, leads northward of these dangers. Vessels from southward, bound for Cala San Giovanni anchorage, should keep Marchese farm (page 313) bearing less than 325° until on the alignment of Belvedere and the obelisk.

Anchorage.—There is anchorage in depths of from 8 to 9 fathoms (14^m6 to 16^m5), sand, with the entrance to Porticciolo di Pianosa bearing 180° and Belvedere bearing 250°. Small vessels, especially during south-easterly winds, may anchor in the middle of Cala San Giovanni in depths of about 4 fathoms (7^m3), with Belvedere bearing 295° and the canteen, a long, low, reddish building in the middle of the village, bearing 180°.

Submarine telegraph cable.—Beacons.—A telegraph cable is

Charts 158, 1131, 1780, 2158a, 449.

Chart 1719, plan of Pianosa island.

landed in Cala San Giovanni near the south-eastern entrance point. The direction of the cable, which is indicated by pecked lines on the plan, is marked by the alignment of two beacons, which are in line when bearing 216° . 5

Port facilities.—Small quantities of provisions may be obtained on request from the local authorities. Small quantities of fresh water may also be obtained on request; it is supplied in casks.

There is regular sea communication with Portoferraio and ports on the Italian mainland. 10

Coast.—Dangers.—From Il Marzocco (*Lat. $42^{\circ} 35' N.$, Long. $10^{\circ} 06' E.$*), the eastern coast trends about three-quarters of a mile southward to Punta Secca, a point from which a rocky spit extends about one cable eastward; there are depths of about one foot (0^m3) over this spit and the sea breaks on it. 15

Isolotto La Scola lies about $3\frac{1}{2}$ cables south-eastward of Il Marzocco and about $1\frac{1}{2}$ cables offshore. It is 111 feet (34^m0) high, and being of greater elevation than Isola di Pianosa, is prominent; it has a flat top on which is a triangulation pillar. The islet lies on a shoal bank and must be given a berth of at least one cable. 20

A rocky shoal with a least depth of $1\frac{1}{2}$ fathoms (2^m7) over it lies about a quarter of a mile south-south-eastward of Isolotto La Scola.

From Punta Secca, the coast trends south-westward for about three-quarters of a mile to Punta Brigantina, the southern extremity of the island; this stretch should not be approached within a distance of about one cable on account of an isolated one-foot (0^m3) rocky patch which lies about midway between these points. Punta Brigantina is 92 feet (28^m0) high and steep and has a small yellow house on it. A bank on which the depths are less than 2 fathoms (3^m7), extends about one cable southward and south-westward of the point. 25 30

Southern side of the island.—Coast.—Anchorage.—From Punta Brigantina, the southern coast trends west-north-westward for about 11 cables to Punta Segnale, the eastern entrance point of Cala Ruta, a cove with depths of 6 fathoms (11^m0) to within a short distance of its rocky shores; landing can be effected at the head of this cove. 35 From the western entrance point of Cala Ruta, situated about $3\frac{1}{2}$ cables westward of Punta Segnale, the steep cliffy coast trends about 3 cables westward to Punta Ruta; Torre San Marco, an isolated square tower, stands at an elevation of 89 feet (27^m1), on top of the cliff near the middle of this stretch. 40

During northerly winds, vessels may obtain anchorage south-eastward of Cala Ruta in depths of about 10 fathoms (18^m3), sand, about 3 cables offshore, with the yellow house on Punta Brigantina bearing 083° and Torre San Marco bearing 305° .

Western side of the island.—Coast.—Anchorage.—Between 45 Punta Ruta and Punta Libeccio, the western extremity of the island, situated about 7 cables north-north-westward, the coast is steep and fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends as much as $3\frac{1}{2}$ cables offshore. From Punta Libeccio, the rocky and precipitous coast trends east-north-eastward for about 50 half a mile to Punta Pulpito, on which, at an elevation of 79 feet (24^m1), is a pillar.

Between Punta Pulpito and Punta del Marchese, about 2 miles north-north-eastward, the coast forms Golfo della Botte, a wide bight

Charts 158, 1131, 1780, 2158a, 449.

Chart 1719, plan of Pianosa island.

with regular and precipitous shores ; these shores are fringed by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends in places about 2 cables offshore.

- 5 During settled south-easterly weather, vessels of moderate size may obtain good shelter about 4 cables eastward of Punta Pulpito (*Lat.* 42° 35' N., *Long.* 10° 04' E.), in depths of from 5 to 5½ fathoms (9^m1 to 10^m1), sand and weed. This anchorage is sheltered even should the wind veer southward and south-westward. Landing can be effected
10 about half a mile east-south-eastward of Punta Pulpito, where there is a pathway cut in the rock which is marked by a black horizontal band about half-way up the cliff.

- Cala dell' Arco is a cove on the southern side of Punta del Marchese. A large above-water rock lies in the middle of the entrance, and about
15 half a cable westward of it is a one-fathom (1^m8) rocky patch ; a 7-foot (2^m1) patch lies about a quarter of a cable off the northern shore of the cove and there are further shoals south-south-westward of the above-water rock. Cala dell' Arco should only be entered by small craft with local knowledge.

20 *Chart 158.*

- ISOLA DI MONTECRISTO.—General remarks.**—Isola di Montecristo lies with Punta del Diavolo, its north-western extremity, about 16 miles south-eastward of the southern extremity of Isola di Pianosa. It is a bare, conical island of granite formation with high,
25 precipitous and steep-to coasts, and it attains its greatest elevation of 2,126 feet (648^m0) at Picco del Segnale, situated about 9 cables south-eastward of Punta del Diavolo. The north-eastern coast of the island, which is overlooked by Picco del Segnale and Picco della Fortezza, 1,457 feet (444^m1) high, about 4 cables north-north-eastward of Picco
30 del Segnale, is more barren, smooth and inaccessible than any other part. The island is a game preserve and the only inhabitants are the wardens, who inhabit some buildings at the head of Cala Maestra, situated about the middle of the western coast, about one mile south-south-westward of Punta del Diavolo.

- 35 Landing on the island without permission is prohibited.

Coast.—Anchorage.—From Punta del Diavolo, the western coast of the island trends south-westward for about 3 cables to Punta Cappel di Prete, the northern entrance point of Cala del Santo, a small cove near the head of which is a very ancient monastery in ruins.

- 40 Cala Maestra, about half a mile southward of Cala del Santo, is readily identified by the white buildings at its head. Except during north-westerly winds, landing can be effected north-westward of the buildings, at a rough stone hard, inside a short jetty. There is a slip-way for hauling up boats, situated close south-eastward of the stone
45 hard.

Vessels with local knowledge can anchor in Cala Maestra, in depths of 5½ fathoms (10^m1), with the stern secured to rings ashore ; care must be taken to anchor clear of the telegraph cable.

- Submarine telegraph cable.**—A telegraph cable is landed in Cala
50 Maestra ; anchorage is prohibited in its vicinity.

Coast.—Anchorage.—Cala Santa Maria is a bight, open westward, about 4 cables southward of Cala Maestra. La Mendolina is a small cove close southward of Cala Santa Maria, lying inside a point which

Chart 158.

from seaward appears to be split by a vertical cleft. This cove is used by fishing craft as a harbour of refuge.

From La Mendolina, the coast trends about 7 cables south-south-eastward to Punta alle Grotte, the south-western extremity of the island, and thence east-south-eastward for about 9 cables to Punta della Piana, its south-eastern extremity (*Lat.* 42° 19' N., *Long.* 10 19' E.); about midway along this latter stretch is Cala Gemelle, formed by two similar and contiguous coves which may be identified by a detached, above-water rock close off the eastern entrance point of the eastern cove.

Cala Corfù, the largest inlet in the coasts of the island, is entered between Punta della Piana and Punta Forata, about half a mile north-eastward. Punta della Piana is easily identified as it consists of bare, yellowish rock and is the only point on the island which slopes gradually to the sea; Punta Forata, when seen from eastward, presents a natural arch.

Cala Scirocco, about half a mile north-north-eastward of Punta Forata, has a small beach at its head where landing can be effected. Cala dello Scoglio, about 5½ cables northward of Cala Scirocco, affords shelter during north-westerly winds. An isolated, smooth-sided whitish rock lies close inshore at the middle of the head of the cove, against which it is only visible from a short distance.

Vessels with local knowledge can anchor in the middle of Cala dello Scoglio, in depths of 5½ fathoms (10^m1), about half a cable from the isolated whitish rock. It is advisable to buoy the anchor as the bottom is rocky.

Cala della Fortezza, about half a mile north-north-westward of Cala dello Scoglio, has smooth whitish cliffs on either side flanking green slopes at the head. Punta della Fortezza, about half a mile north-westward of Cala della Fortezza, presents a remarkable vertical cleft when seen from north-eastward. From Punta della Fortezza, the coast trends about 7 cables westward to Punta del Diavolo, forming Cala del Diavolo, a slight bight the shores of which consist of smooth granite slopes.

Formiche di Montecristo.—Light.—Formiche di Montecristo lies on a bank with depths of less than 20 fathoms (36^m6) over it, situated between 8 and 10 miles westward of Isola di Montecristo. It comprises Scoglio Africa, a small rock, 6 feet (1^m8) high, with shoal spits extending about a quarter of a mile northward, and half a mile southward of it, and two rocky patches, with depths of 4 and 3½ fathoms (7^m3 and 5^m9) over them, situated, respectively, about 2½ and 3 miles north-north-eastward of Scoglio Africa.

A light is exhibited, at an elevation of 62 feet (18^m9), from a round, stone tower, 52 feet (15^m8) in height, situated on Scoglio Africa.

Scoglio Africa must be given a berth of at least one mile as it is often difficult to distinguish in thick weather. The current in its vicinity usually sets eastward.

Chart 1719, plan of Giglio island.

ISOLA DEL GIGLIO.—Signal station.—Isola del Giglio is situated with Punta del Fienaiò (Fenaio), its north-western extremity, about 25 miles eastward of the northern extremity of Isola di Montecristo, and is separated from Promontorio Argentario (page 332) by

Charts 1780, 676, 2158a, 449.

Chart 1719, plan of Giglio island.

a channel about 8 miles wide. It is of granite formation and is little cultivated, but there are granite and alum quarries and, with the exception of Isola d'Elba, it is the most populous island of Arcipelago Toscano. Its coasts are high, steep and generally clear of dangers. Poggio della Pagana (*Lat. 42° 21' N., Long. 10° 54' E.*), 1,634 feet (498^m0) high, situated in the middle of the island, is the highest summit; a small white triangulation beacon, which is only clearly visible from close westward of the island, stands on its summit.

- 10 The village of Giglio Castello, which in 1947 had a population of 1,089, is situated at an elevation of 1,335 feet (406^m9) grouped around a large castle of the same name, about one mile northward of Poggio della Pagana, and is one of the best landmarks in the island. An old lighthouse, situated on a hill, 945 feet (288^m0) high, about half a mile northward of the castle, is also a prominent landmark.

A signal station, with a tall framework mast close to it, stands on Giglio Castello. Storm warning signals are displayed, *see* page 11.

- Current.**—Along the eastern coast of Isola del Giglio there is a north-going current which is fairly strong at times particularly during the summer. It is independent of the wind which frequently blows in a direction contrary to the current.

- Punta del Fienao. — Light. — Danger.** — Punta del Fienao (Fenaio) can be readily identified by the light-structure surmounting it. The old lighthouse and Giglio Castello overlook the point from south-eastward, and farther southward the rounded summit of Poggio della Pagana may be seen.

- A light is exhibited, at an elevation of 130 feet (39^m6), from an octagonal tower attached to a white dwelling, 33 feet (10^m1) in height, situated on Punta del Fienao.

- A small rocky patch with a depth of 5½ fathoms (10^m1) over it, and surrounded by depths of 16 fathoms (29^m3), lies about three-quarters of a cable north-north-westward of the extremity of the point.

- Western side of the island.—Coast.—**
Danger.—From Punta del Fienao the western coast trends southward for about 4 cables to Punta Le Secche; a rocky shoal with a least depth of 5 feet (1^m5) over it, lies about 1½ cables north-north-westward of Punta Le Secche.

- Seno del Campese. — Danger. — Anchorage.** — Seno del Campese is entered between Punta Le Secche and Punta Faraglione, about 1½ miles south-south-westward. It has high, rocky shores except at its head which is formed by Spiaggia del Campese, a sandy beach divided into two parts by a flat, rocky promontory. Torre del Campese, a large, well-preserved tower, stands on a small rocky peninsula at the north-eastern end of Spiaggia del Campese and about 6 cables eastward of Punta Faraglione. Il Faraglione, a tall pillar of rock, lies close off the extremity of Punta Faraglione, and is prominent.

An overhead cableway, which carries mineral ore from the mines in the centre of the island, crosses Spiaggia del Campese at a platform surrounded by four pillars, about a quarter of a cable offshore; a



40 *Punta del Fienao light-tower.*

Chart 1719, plan of Giglio island.

mooring buoy is moored about half a cable north-eastward of the platform.

I Pignocchi, a rocky shoal with a least depth of one fathom (1^m8) over it, lies about 3½ cables north-north-westward of Torre del Campese and about 1½ cables offshore. Punta del Fienao light-structure open westward of Punta Le Secche and bearing more than 010° leads westward of I Pignocchi (*Lat.* 42° 22' N., *Long.* 10° 53' E.).

There is anchorage off Spiaggia del Campese in depths of about 8 fathoms (14^m6), with Poggio della Pagana bearing 135° and in line with the rocky promontory dividing the beach, and Torre del Campese bearing about 061°. Small vessels can anchor closer inshore on the same alignment, in depths of about 4 fathoms (7^m3). This anchorage affords excellent shelter from south-easterly winds but is untenable with winds from between north and west, which sometimes blow with great violence.

Lo Scalettino, a small cove on the northern side of the promontory containing Torre del Campese, makes a good landing place; boats entering this cove should hug the northern shore, passing northward of two detached rocks in the entrance.

Coast.—Light.—Between Punta Faraglione and Punta Saline, about one mile southward, the coast is high, bare and rocky. It is fringed by a rocky bank which, with depths of less than 5 fathoms (9^m1) over it, extends in places as much as 1½ cables offshore. Several above-water rocks lie close inshore along this stretch and Scoglio Mezzo Franco, a rugged, dark-green rock, is situated about 2 cables north-north-westward of Punta Saline and about one cable offshore. When seen from north-north-westward Scoglio Mezzo Franco presents a rugged, semi-circular outline. Punta Salina, a low, sharp and rocky point projecting about three-quarters of a cable from the adjoining coast, is easily recognised from either northward or southward.

From Punta Saline, the coast trends about half a mile eastward to Punta Salto del Cane, a light-coloured, steep and rocky point tending to be green and fronted by two rocky shoals about half a cable offshore. Scoglio Pietra Alta, a dark-green rock, lies close inshore about one cable westward of Punta Salto del Cane.

Cala dell' Allume is entered between Punta Salto del Cane and the coast abreast La Cappa, a light-yellow rock, situated about 2½ cables east-south-eastward and about half a cable offshore; being much the same colour as the coast behind it, La Cappa does not show up well. There are some alum quarries high up on the eastern side of Cala dell' Allume.

Vessels with local knowledge may obtain temporary anchorage in the middle of Cala dell' Allume, in depths of from 5½ to 8 fathoms (10^m1 to 14^m6).

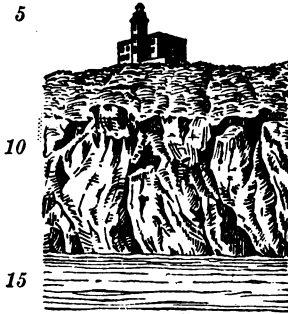
From abreast La Cappa, the coast trends south-south-eastward for about three-quarters of a mile to Punta Penna, and thence about 2 miles south-eastward to Punta di Capel Rosso, the southern extremity of the island. This stretch of coast is light-coloured, bare and rocky and without any remarkable features; it may be closely approached, avoiding the above-water rocks close inshore.

Il Corvo, a small dark rock, surrounded by considerable depths, lies about half a cable westward of Punta Penna; Cala del Corvo lies close eastward of the same point.

Charts 3902, 158, 1780, 2158a, 449.

Chart 1719, plan of Giglio island.

A light is exhibited, at an elevation of 295 feet (89^m9), from a white octagonal tower on a two-storeyed dwelling, 66 feet (20^m1) in height, situated about 2½ cables northward of the extremity of Punta di Capel Rosso (*Lat.* 42° 19' N., *Long.* 10° 55' E.).



*Punta di Capel Rosso
light-tower.*

Eastern side of the island.—Coast.—

Cala Saracinesca is a small cove, situated close north-eastward of Punta di Capel Rosso; landing can be effected in the cove for visiting the lighthouse, but the best landing place from which to reach it is Sbarco dei Turchi, a sort of natural quay a short distance north-north-eastward of the cove, with a good pathway to the lighthouse.

Between Punta di Capel Rosso and Capo Marino, about 2 miles northward, the coast presents no remarkable features.

20 Cala Cannelle is entered between the coast close northward of Capo Marino, and Punta di Castellari, about 3½ cables northward. The southern shore of this cove is fringed by a bank on which the depths are less than 6 feet (1^m8), which extends about half a cable offshore. Le Scuole, a group of blackish, above-water rocks, lies within about
25 1½ cables of Punta di Castellari. An old guardhouse stands at an elevation of 220 feet (67^m1) on the summit of Poggio di Castellari, a hill about one cable north-westward of the point, and on the western slopes of the hill, the cemetery of Giglio Marina with a chapel may be distinguished.

30 Small vessels with local knowledge may obtain temporary anchorage in Cala Cannelle, about half a cable offshore, in depths of about 5½ fathoms (10^m1).

Giglio Marina.—Harbour.—Lights.—

The village of Giglio Marina which, in 1947, had a population of 1,054, lies stretched along
35 the head of a small harbour, about a quarter of a mile north-westward of Punta di Castellari; an old circular tower stands at the eastern end of the village.

The harbour is protected by two moles. The eastern mole projects about three-quarters of a cable north-north-westward from the coast
40 abreast the old tower, and the western mole projects about half a cable east-north-eastward from the coast about one cable north-westward of the tower; the entrance between the two moleheads is 55 yards (50^m3) wide. In 1951, work was in progress extending the eastern mole, and vessels should give the mole head a berth of 22 yards (20^m1).

45 A light is exhibited, at an elevation of 31 feet (9^m4), from a grey, iron, framework structure on a white masonry hut, 15 feet (4^m6) in height, situated on the head of the eastern mole.

A light is exhibited, at an elevation of 31 feet (9^m4), from a white masonry hut, 15 feet (4^m6) in height, situated on the head of the
50 western mole.

There are depths of 13 feet (4^m0) in the harbour which can accommodate small vessels only; these vessels can berth alongside the inner part of the eastern mole.

The depths outside the harbour increase too rapidly for safe anchor-

Charts 3902, 158, 676, 1780, 2158a, 449.

Chart 1719, plan of Giglio island.

age, but a mooring buoy for the use of the mail steamers is moored off the entrance to the harbour.

Port facilities.—Limited supplies only of provisions are available, but with previous notice larger quantities can be sent from Porto Santo Stefano (page 332). Water can be obtained from a spring in the village. 5

There is daily sea communication with Porto Santo Stefano.

Submarine telegraph cable.—**Beacons.**—A telegraph cable is landed near the root of the eastern mole at Giglio Marina; its direction is indicated by the alignment of two beacons. Anchoring and fishing are prohibited in the vicinity of the cable. 10

Coast.—**Danger.**—From Giglio Marina (*Lat. 42° 22' N., Long. 10° 55' E.*), the coast trends about half a mile northward to Punta Lazzaretto; Torre Lazzaretto stands on a hill about one cable south-westward of the point. 15

Punta della Croce, situated about one mile north-westward of Punta Lazzaretto, terminates in smooth, grey rock, in which are two deep incisions forming a cross.

Secca della Croce, a rocky shoal with a least depth of $2\frac{1}{2}$ fathoms (4^m6) over it and deep water around it, is situated about a quarter of a mile northward of Punta della Croce. The shoal lies on the alignment of Punta della Croce and Giglio Castello, bearing 187°.

From Punta della Croce, the coast trends about three-quarters of a mile west-north-westward to Punta del Morto, a bare, smooth and sloping point, and thence trends westward for about $4\frac{1}{2}$ cables to Punta del Fienai. 25

Chart 1719, plan of Giannutri isle.

ISOLA DI GIANNUTRI.—**General remarks.**—Isola di Giannutri lies about $8\frac{1}{2}$ miles south-eastward of the southern extremity of Isola del Giglio and about $6\frac{1}{2}$ miles south-south-eastward of the southern coast of Promontorio Argentario. The coasts of the island are steep-to and rocky and the highest point on the island is Punta Mezzogiorno, 305 feet (93^m0) high, on which stands a small tower and which is situated about $3\frac{1}{2}$ cables north-north-westward of Punta Rossa, the southern extremity of the island. 35

There is no water on the island except what is collected in reservoirs from rain. Numerous ruins and fragments of marble from the period of the Roman Empire are found everywhere on the island. The few inhabitants live near Cala Maestra, a cove at the north-western extremity of the island. 40

There is occasional sea communication with Porto Ercole (page 336).

Coast.—**Light.**—Cala Maestra, the only inhabited locality, is a small cove with rocky shores and a stony beach at its head. It can be identified by a grey, square house, which, in addition to some Roman ruins, stands close southward of Punta Scaletta, the northern entrance point of the cove, and also by a massive, four-storeyed building resembling a fortress, which stands at an elevation of 272 feet (82^m9) on the summit of Poggio Cannone, about $1\frac{1}{2}$ cables eastward of the head of the cove. 50

Cala Maestra can only be used by small craft with local knowledge and in calm weather, and the depths off the cove increase too rapidly to permit anchorage.

Charts 3902, 158, 676, 1780, 2158a, 449.

Chart 1719, plan of Giannutri isle.

About $1\frac{1}{4}$ cables south-south-westward of the southern entrance point of Cala Maestra is the western extremity of the island, a low, dark and rocky point whence the western coast trends about $1\frac{1}{4}$ miles south-eastward to Punta Rossa.



10 *Punta Rossa light-tower.*

A light is exhibited, at an elevation of 200 feet (61^m0), from an octagonal tower and one-storeyed dwelling, situated about one cable north-westward of Punta Rossa (*Lat.* 42° 14' N., *Long.* 11° 07' E.). Distress signals are displayed, see page 11.

The eastern side of the island is mostly occupied by Golfo degli Spalmatoi, a large bight entered between Punta del Calettino, about 15 4 cables northward of Punta Rossa, and Punta San Francesco, about half a mile north-north-eastward. It affords good shelter from all but south-easterly winds, but the depths are rather great and the bottom is rocky. The shores of the gulf are bare, rocky and steep-to and there are landing steps cut in the rock close westward of Punta del 20 Calettino; the steps connect with a pathway leading to the lighthouse.

Cala Spalmatoi is a deep and narrow cove at the north-western corner of the gulf, which affords good anchorage, in depths of 7 fathoms (12^m8), close within the entrance, to one small vessel with local knowledge.

25 From Punta San Francesco, the coast trends north-north-westward for about 7 cables to Punta Secca, the northern extremity of the island; Cala dello Spogno, a cove about midway along this stretch, may be identified by a blackish, pointed rock.

Punta Secca is low, flat and formed of black porous rock; it is 30 fringed by a spit on which there are depths of 2 fathoms (3^m7), which extends about half a cable north-westward of the point.

Between Punta Secca and Punta Scaletta (*Lat.* 42° 15' N., *Long.* 11° 06' E.), about 7 cables west-south-westward, the northern coast of the island is composed of the same black porous rock as Punta Secca 35 and is called Spiaggia di Punta Secca.

Charts 3902, 158, 676, 1780, 2158a, 449.

CHAPTER X

WESTERN COAST OF ITALY—PROMONTORIO DI PIOMBINO TO PUNTA DI FUMO—ISOLE PONTINE

CLIMATE AND WEATHER.—See page 30.

Chart 3906.

COAST.—**Golfo di Follonica.**—From the south-eastern extremity of Promontorio di Piombino (page 293), the coast trends in a wide curve to Punta Ala, about 11 miles south-eastward, forming Golfo di Follonica, a gulf, the northern and north-eastern shores of which are low and marshy. Porto Vecchio di Piombino is situated at the north-western corner of the gulf.

Chart 158, plan of Port Vecchio di Piombino.

Porto Vecchio di Piombino. — Punta della Batteria (*Lat. 42° 56' N., Long. 10° 33' E.*), situated about $3\frac{1}{2}$ cables northward of Piombino signal station (page 293), is the eastern extremity of the rocky part of Promontorio di Piombino; northward of this point the coast becomes low and sandy and trends north-north-westward and north-north-eastward for about one mile to the mouth of Fiume Cornia, forming Rada di Porto Vecchio. The town and harbour of Porto Vecchio lie at the head of the roadstead and may be identified by the numerous stone chimneys of the ironworks there.

The streams from the high land of Piombino and the drainage from the marshy country farther eastward enter the sea through Fiume Cornia and through canals which discharge into that river close within its mouth. The river mouth is marked by rocky ridges which extend a short distance from either entrance point, and there is a pine grove a little eastward of the mouth.

Dangers.—The depths in Rada di Porto Vecchio are very irregular and there are numerous depths of less than 5 fathoms (9^m1) in the roadstead, the positions of which may best be seen on the chart. A $3\frac{1}{2}$ -fathom (5^m9) rocky patch lies about 7 cables north-eastward of Punta della Batteria.

Pilotage.—There are several pilots at Porto Vecchio di Piombino. Vessels requiring a pilot should hoist the usual pilot flag when passing Piombino signal station.

Harbour.—**Lights.**—The harbour is protected south-eastward by an elbow mole which extends eastward and north-eastward for about $2\frac{1}{2}$ cables from Punta della Batteria, and northward by Pontile Ilva, a large, concrete jetty which extends about $1\frac{1}{2}$ cables east-north-

Charts 3906, 3901, 158, 1780, 2158a, 449.

Chart 158, plan of Port Vecchio di Piombino.

eastward from a position about 4 cables north-north-westward of the root of the mole. A jetty extends about three-quarters of a cable north-north-westward from the northern side of the root of Pontile Ilva and forms the eastern side of a small basin named Darsena Ilva.

A light is exhibited, at an elevation of 30 feet (9^m1), from an iron framework structure painted in red and white stripes, 16 feet (4^m9) in height, situated on the head of the mole.

Two lights, disposed vertically, are exhibited at elevations of 35 and 46 feet (10^m7 and 14^m0), from a wooden framework structure on a stone base, 43 feet (13^m1) in height, situated on the head of the jetty extending north-north-westward from the root of Pontile Ilva.

Four lights, disposed horizontally, are exhibited at an elevation of 16 feet (4^m9), from the buffers of the railway track near the head of Pontile Ilva.

Quayage.—Depths.—Beacon.—The inner side of the mole and both sides of Pontile Ilva are faced by quays, and there are numerous quays and jetties at the head of the harbour between the root of the mole and Pontile Ilva. These quays and jetties suffered extensive war damage and there were numerous wrecks and obstructions.

In 1949, most of the quays had been repaired and several of the wrecks removed, but vessels berthing in the harbour should embark a pilot.

The quay on the inner side of the mole has depths alongside its outer port of from 25 to 29 feet (7^m6 to 8^m8); there are no facilities for working cargo at this quay and the mole is not used for commercial traffic.

Banchina Premuda extends about three-quarters of a cable north-westward from the root of the mole; small vessels with a draught not exceeding 10 feet (3^m0) berth end-on at this quay.

Pontile Elba (*Lat. 42° 56' N., Long. 10° 33' E.*) projects about 200 feet (61^m0) north-eastward from the north-western end of Banchina Premuda; there are depths of about 20 feet (6^m1) alongside the head of this jetty, decreasing to about 12 feet (3^m7) alongside its root. Pontile Elba is reserved for berthing the mail steamers which carry out daily trips with Isola d'Elba.

Darsena Guiseppe Lanini is situated on the north-western side of Pontile Elba; it has shoal depths and is only used by small coasting craft.

Darsena Magona d'Italia lies north-westward of Darsena Guiseppe Lanini from which it is separated by a large curved jetty; there are four small wooden piers in this basin all of which are connected by rail with the iron works in the town. These piers are used exclusively by lighters loading or discharging in connection with the iron works.

The quays on both sides of Pontile Ilva are those in general use for commercial traffic; they have depths of 29 feet (8^m8) alongside the head, decreasing to about 18 feet (5^m5) near the root.

The western side of Darsena Ilva is lined with a quay about 1½ cables in length, and vessels not exceeding 16 feet (4^m9) in draught can be berthed alongside. The entrance to this basin is obstructed by shoals which are situated northward and eastward of it; a black beacon surmounted by a black triangle, 13 feet (4^m0) in height, is situated about half a cable northward of the jetty forming the eastern side of the basin, and marks the extremity of the shoals northward of it.

Charts 3906, 3901, 158, 1780, 2158a, 449.

Chart 158, plan of Port Vecchio di Piombino.

Anchorage.—Vessels may obtain anchorage in Rada di Porto Vecchio, in depths of about $5\frac{1}{2}$ fathoms (10^m1), stiff mud and good holding ground, with the molehead light-structure bearing 180° and the head of Pontile Ilva bearing 300° . Strong southerly or south-easterly winds raise a heavy sea in the roadstead. 5

Port facilities.—Porto Vecchio di Piombino is an important industrial centre, importing large quantities of raw materials for the iron works such as coal, iron ore and scrap iron and producing principally iron pipes, castings, rolled steel, etc. There is a large civil hospital in the town. 10

A limited quantity of the coal stocked for the use of the industrial works might be supplied to a vessel in an emergency.

Small quantities of fuel oil are maintained.

Fresh provisions are plentiful. Fresh water is available alongside Pontile Ilva, Pontile Elba and at the quay in Darsena Ilva. 15

Urgent repairs can be undertaken. There are two patent slips, the larger of which can take vessels up to 200 feet (61^m0) in length.

There are numerous cranes on Pontile Ilva, the quay in Darsena Ilva and on the piers in Darsena Magona d'Italia; the largest crane has a lifting capacity of 10 tons. 20

There are several lighters and 2 medium-sized tugs in the port.

There is daily sea communication with Isola d'Elba and regular sea communication with other islands in Arcipelago Toscano and with other Italian ports. 25

Chart 3906.

Coast.—Dangers.—Between the mouth of Fiume Cornia and the town of Follonica (*Lat.* $42^\circ 55' N.$, *Long.* $10^\circ 45' E.$), about $9\frac{1}{2}$ miles eastward, the coast is fronted by a bank which, with depths of less than 6 fathoms (11^m0), extends about one mile offshore. Torre del Sale, a low, whitish and isolated tower, stands on the beach about $2\frac{1}{2}$ miles eastward of the mouth of Fiume Cornia, and Torre Mozza, a dark, square tower, the upper part of which is broken away, is also situated on the beach, about $4\frac{1}{2}$ miles farther eastward. 30

A rocky patch on which there is a depth of less than 6 feet (1^m8) lies about 7 cables southward of Torre Mozza, and Secca del Pino, a rocky shoal on which there is a least depth of 2 feet (0^m6), lies about $1\frac{1}{2}$ miles south-eastward of Torre Mozza and about $5\frac{1}{2}$ cables offshore. Scarlino, a village about $4\frac{1}{2}$ miles eastward of Follonica, which stands at an elevation of 778 feet (237^m1) and appears as a white patch on the hills, bearing not more than 095° and open southward of Follonica, leads southward of these dangers. 40

Follonica.—Anchorage.—The town of Follonica, which in 1947 had a population of about 10,000, stands on a coastal plain among trees. The parochial church, with a slender grey belfry on a square base, shows up well about a quarter of a mile inland, and a large yellow building with a red roof is prominent about 4 cables south-eastward of the town. 45

Rocky patches, with depths of 5 and 7 feet (1^m5 and 2^m1) over them, lie about $4\frac{1}{2}$ and 5 cables, respectively, south-westward of the church. A detached rocky shoal with a depth of $2\frac{3}{4}$ fathoms (5^m0) over it lies about $8\frac{1}{2}$ cables south-south-westward of the church and about 8 cables farther south-south-westward is a $5\frac{3}{4}$ -fathom (10^m5) patch. 50

The principal industry at Follonica is iron working; small craft

Charts 3906, 158, 1780, 2158a, 449.

Chart 3906.

carrying iron ore, formerly berthed at the larger of two piers which projected from the coast abreast the town. Both these piers were destroyed during hostilities, and in 1947 only unserviceable framework
 5 remained of their structures.

There is anchorage, in depths of $6\frac{1}{2}$ fathoms (11^m9), mud and weed, with Torre Mozza bearing 321° and Follonica church bearing 030° . Owing to the shoals mentioned above, it is inadvisable for any vessels to anchor in depths of less than $5\frac{1}{2}$ fathoms (10^m1).

- 10 The anchorage is exposed to south-westerly winds which, when strong, and especially in winter, render it untenable.

Port facilities.—Small quantities of provisions are available. Repairs to small craft can be undertaken. There is a small private hospital.

- 15 **Coast.**—**Danger.**—Between Follonica and the mouth of Fiumara Pecora, about $2\frac{1}{2}$ miles south-eastward, the coast consists of a low sandy beach; Fiumara Pecora is the outlet of Padule di Scarlino, a large marsh lying close within the beach.

- A rocky patch with depths of 8 feet (2^m4) over it lies about $3\frac{1}{4}$ cables
 20 westward of the mouth of Fiumara Pecora.

- Punta Portiglione, which lies about $3\frac{1}{2}$ cables south-westward of the mouth of Fiumara Pecora, marks the end of the low beach and the commencement of a steep and rocky stretch of coast; the point is relatively high and steep, with a flat top on which is a two-storeyed
 25 building painted in camouflage colours.

About half a cable off a point south-westward of Punta Portiglione (*Lat. $42^\circ 53' N.$, Long. $10^\circ 47' E.$*) is an octagonal pillar on a concrete platform, forming the terminus of an overhead cableway which transports iron ore direct from local mines into lighters.

- 30 Small craft moor at buoys close off the pillar; larger vessels anchor about $2\frac{1}{2}$ cables westward of it. Southerly and south-westerly winds, if strong, may interrupt loading. A small pier, with depths of about 7 feet (2^m1) alongside its head, projects from the coast about a quarter of a cable north-eastward of the point and is used as a landing place.

- 35 **Lights.**—Leading lights have been established on the point close south-westward of Punta Portiglione. The front light is exhibited, at an elevation of 62 feet (18^m9), from a grey wooden framework structure; the rear light is exhibited, at an elevation of 75 feet (22^m9), from a similar structure about 26 yards (23^m8) south-eastward of the
 40 front light. These lights in line, bearing 138° , lead to the anchorage off the pillar.

A light is exhibited from the pillar forming the terminus of the overhead cableway.

- Coast.**—**Dangers.**—From Punta Portiglione the coast trends south-
 45 south-westward for about one mile to Punta Francese, and thence trends southward for about 11 cables to Punta Le Canne; Punta Martino lies about midway between Punta Francese and Punta Le Canne, and all three points are steep and rocky. The steep, rocky coast terminates about 4 cables southward of Punta Le Canne, whence
 50 a sandy beach, backed by picturesque green hills, sweeps south-westward in a wide curve for about $2\frac{1}{2}$ miles and terminates at Punta Hidalgo, the extremity of a steep rocky promontory, surmounted at an elevation of 138 feet (42^m1) by an ancient, light-coloured square tower.

Chart 3906.

Two rocks, each with a depth of 8 feet (2^m4) over it, lie close together about one cable northward of Punta Hidalgo, and for about 3½ cables eastward of the point the coast is fronted by a bank which, with depths of less than 6 feet (1^m8) over it, extends about 2 cables offshore. 5

From Punta Hidalgo, the coast trends south-westward for about 6½ cables to Punta Ala, the south-eastern entrance point of Golfo di Follonica. Cala del Pozzo, a small harbour protected by two moles, lies about midway along this stretch; the entrance, which is about 60 yards (54^m9) wide, faces northward. This harbour has been abandoned and, except for the moles, there are no harbour works or buildings in the vicinity. There are depths of 9 feet (2^m7) in, and close inside, the entrance, but the depths in the remainder of the harbour are less than 6 feet (1^m8) and it is subject to rapid silting. 10

Punta Ala may be identified by a prominent fort of the same name, 15 a reddish, square, four-storeyed building with windows, surmounted by a massive square tower, which stands at an elevation of 220 feet (67^m1), about 2 cables eastward of the point. A two-storeyed yellowish building with a curved façade facing westward stands on the extremity of Punta Ala. 20

I. Percellini, a ridge of rocks, three of which are above water, extends about 3½ cables westward of Punta Ala. A strong current, particularly during the summer months with north-westerly winds, sets towards these rocks.

Off-lying islet.—Scoglio dello Sparviero, an islet lying about half 25 a mile west-south-westward of the outermost above-water rock of I. Percellini, is surmounted at an elevation of 125 feet (38^m1) by an old circular tower. Its coasts are rocky and steep-to, except on the eastern side, where a spit on which the depths are less than 6 feet (1^m8) extends about half a cable eastward. There are depths of 30 about 11 fathoms (20^m1) in the fairway of the passage between the islet and I. Percellini, but it should not be attempted without local knowledge.

Coast.—From Punta Ala (*Lat.* 42° 48' N., *Long.* 10° 44' E.), the coast trends east-south-eastward for about 3½ miles to Forte Rocchetta, 35 a yellowish building with an old square tower, situated at an elevation of 105 feet (32^m0) on a rocky spur. Torre Galera, tall, circular and surrounded by ruins, stands at an elevation of 420 feet (128^m0), on the coast about 4½ cables north-westward of Forte Rocchetta.

Chart 158.

From Forte Rocchetta, a sandy beach trends in a wide curve for about 12 miles south-eastward to the mouth of Fiume Ombrone. About 3½ miles east-south-eastward of Forte Rocchetta, the beach is broken by Punta Capezzuolo, a rocky point covered with pine trees among which may be seen a brick-red villa fronted by a wall. Between 45 Punta Capezzuolo and the town of Castiglione della Pescaia, about three-quarters of a mile east-south-eastward, the coast within the beach is dotted with numerous villas with bright red roofs.

Castiglione della Pescaia.—The town of Castiglione della Pescaia, which in 1947 had a population of 6,018, is situated on the northern 50 bank of a canal, partly on a plain and partly on the slope of a hill surmounted by an old citadel. An old light-coloured windmill stands on another hill close northward of the citadel and between them may be seen a cemetery. A reddish square belfry with a small cupola is

Chart 158.

prominent north-eastward of the citadel, and the war memorial, a white obelisk about 50 feet (15^m2) in height, may be seen rising from the low, central part of the town.

- 5 **Porto-Canale. — Lights. — Depths. — Caution.** — The harbour, known as Porto-Canale, is formed at the entrance to the canal which receives the waters of Torrente Bruna as well as various outlets from the adjacent marshes. It is entered between two moles, which each extend about three-quarters of a cable offshore and are lined with
10 quays on their inner sides. An iron bridge on concrete pillars crosses the harbour about 3½ cables above the entrance.

A light is exhibited, at an elevation of 23 feet (7^m0), from an iron column on a concrete base, situated on the head of each of the two moles projecting seaward from the entrance points.

- 15 There are usually depths of 10 feet (3^m0) in the entrance and of slightly more within it, except in the vicinity of the northern mole where there are depths of only 7 feet (2^m1), but it must be borne in mind that these depths vary greatly, and vessels drawing more than 5 feet (1^m5) should only enter with a calm sea. When Torrente Bruna
20 is in flood, the depths are considerably greater, and after heavy gales from seaward they are considerably less, especially at the entrance. There are always, however, depths of at least 7 feet (2^m1). There is a small quayed basin, with depths of 10 feet (3^m0) in it, situated on the northern side of the harbour just below the bridge.

- 25 The harbour normally accommodates fishing craft and boats and, except for the outer part during strong south-westerly winds, is sheltered in any weather; vessels are unable to remain berthed at the moles extending seaward from the entrance points during bad south-westerly weather.

- 30 Porto-Canale suffered considerable war damage, and in 1947 was reported to be under repair. Caution must therefore be exercised. In 1951 it was reported that extensive silting had taken place in the entrance. Entry should not therefore be attempted without local knowledge.

- 35 **Coast.**—From the south-eastern entrance point of Porto-Canale, the coast, which consists of a sandy beach backed by dense pine woods, trends south-eastward for about 5 miles to Marina di Grosseto, a tourist and bathing resort with numerous villas and buildings close within the beach. Torre di San Rocco (*Lat.* 42° 43' N., *Long.* 10° 59'
40 E.), a reddish circular tower with a white roof, stands on the beach, but is difficult to distinguish among other buildings.

- Fiume Ombrone enters the sea about 4 miles southward of Torre di San Rocco, through a low beach on which is a house with a red roof surmounted by a small lookout tower, standing in front of thick
45 pine woods. The greater part of the mouth of Fiume Ombrone is barred by a long spit of sand and gravel and there are some ancient ruins, both above water and submerged, in front of it. The river mouth should be given a wide berth even in clear weather.

Chart 1719, plan of Formiche di Grosseto.

- 50 **Outlying danger.—Light.**—Formiche di Grosseto consist of three islets or rocks, the northernmost of which is situated about 7 miles south-westward of the mouth of Fiume Ombrone, and the group extends about 1½ miles south-eastward from it; there are considerable depths around and between these rocks.

Charts 158, 1780, 2158a, 2158b, 449.

Chart 1719, plan of Formiche di Grosseto.

Formica Maggiore (North rock), the northernmost rock, 32 feet (9^m8) high, is whitish in colour and is the largest and highest of the group. Two rocks lie close off its northern end, and a rocky patch, with depths of 1½ fathoms (3^m2) over it, lies about half a mile north- 5 westward of it. Fishing boats often shelter off the southern side of Formica Maggiore, where a bank on which the depths are less than 5 fathoms (9^m1) extends as much as 1½ cables offshore. Landing can be effected at a small quay on the eastern side of the islet.

A light is exhibited, at an elevation of 77 feet (23^m5), from a white 10 circular masonry tower on a white dwelling, 39 feet (11^m9) in height, situated on Formica Maggiore.

The middle rock lies about 8 cables south-eastward of the southern extremity of Formica Maggiore and is blackish; an above-water rock lies close off its eastern side and a bank on which the depths are less 15 than 5 fathoms (9^m1) extends about one cable north-north-westward of it.

The southernmost rock, situated about 4 cables south-eastward of the middle rock, is the smallest and lowest of the group; it lies on a shoal bank on which the depths are less than 5 fathoms (9^m1), which, 20 except on its western side, extends from three-quarters of a cable to 1½ cables offshore. During gales, there are overfalls for more than half a mile, southward of this rock.

Chart 158.

Coast.—From the mouth of Fiume Ombrone, the sandy beach 25 turns eastward for about 2½ miles and terminates in a rocky point surmounted by Torre Collelungo, a square tower, old and well-preserved, standing at an elevation of 148 feet (45^m1). Torre Castel Marino, a circular ruined tower, stands on a hill 335 feet (102^m1) high, about half a mile north-north-westward of Torre Collelungo and 30 dominates the stretch of sandy beach.

From Torre Collelungo, the rocky coast trends southward for about 1½ miles to a projecting high promontory on which, at an elevation of 400 feet (121^m9), stands Torre di Cala Forno (*Lat.* 42° 37' N., *Long.* 11° 05' E.), a prominent square tower with high windows. About 35 1½ miles north-north-eastward of Torre di Cala Forno, two towers, known as Torri dell' Uccellina, stand at an elevation of 1,017 feet (310^m0); the north-western tower is tall and reddish while the other is shorter and dark in colour.

Cala Forno, a small rocky cove on the northern side of the high 40 promontory, affords shelter from southerly and south-westerly winds; at its head is a moderately wide beach with a few houses on it. There are depths of from 2½ to 3½ fathoms (5^m0 to 5^m9), sand, in the middle of the cove. Vessels anchor with their bows north-eastward and their sterns secured to the promontory. Landing can be effected at the 45 north-western end of the beach at the head of the cove on a rock close to an old guardhouse with a cupola.

From Torre di Cala Forno, the coast trends south-south-eastward for about 4 miles to Capo d'Uomo, a point at the termination of a gradual slope on the summit of which stands Torre di Capo d'Uomo, 50 a tall, circular tower. About midway along this stretch of coast is Torre Cannelle, squat and square, with an enclosing wall on its southern side. Torre Molinaccio, in ruins but still distinctive from seaward, stands on a point about 4 cables south-eastward of Capo d'Uomo.

Charts 158, 1780, 2158a, 2158b, 449.

Chart 158, plan of Talamone bay.

Baia di Talamone. — Dangers. — Lights. — Anchorage.—

Baia di Talamone is entered between a point about $2\frac{1}{2}$ cables south-eastward of Torre Molinaccio, and Torre Dogana, a grey square tower
5 standing on a point about $1\frac{1}{2}$ miles eastward. The shores of the bay are fronted by a bank, clearly marked by discoloured water, which, with depths of less than 3 fathoms (5^m5) over it, extends as much as $3\frac{1}{2}$ cables offshore in places, but it affords good anchorage during northerly winds when Porto San Stefano (page 332) is untenable.

10 The village of Talamone, which in 1947 had a population of 1,186, lies about one cable northward of the western entrance point of the bay; it is surrounded by a wall and contains an ancient fortress surmounted by a square tower. See view facing page 346. The white belfry of La Madonna della Grazie, situated about 6 cables northward
15 of the village, is only visible from between south and east, but about midway between this church and the village is a cemetery with a white monument in it which is prominent.

A rocky shoal, with a least depth of 5 fathoms (9^m1) over it, lies between $2\frac{1}{2}$ and $4\frac{1}{2}$ cables south-eastward of the western entrance
20 point of the bay.

A light is exhibited, at an elevation of 98 feet (29^m9), from a white square tower, 28 feet (8^m5) in height, situated on the southern extremity of the wall surrounding the village.

About $1\frac{1}{2}$ cables northward of the light-structure, a quayed mole
25 projects about a quarter of a cable from the western shore of the bay, with depths of 8 feet (2^m4) alongside its head. Vessels approaching this mole should keep on the line prolonging its northern side, which leads through a channel in a least depth of 10 feet (3^m0).

A light is exhibited, at an elevation of 21 feet (6^m4), from a white
30 concrete post, 16 feet (4^m9) in height, situated on the head of the mole.

A rough stone jetty, disused and in a poor state of repair in 1947, projects from the north-eastern side of the bay, about $6\frac{1}{2}$ cables north-north-westward of Torre Dogana; a ridge of sunken rocks, with a large flat rock named Scoglione at its extremity, extends about one
35 cable offshore about $1\frac{1}{2}$ cables south-eastward of the jetty.

About 4 cables south-eastward of the disused jetty is Bengodi, a hamlet comprising a group of houses between two villas surrounded by trees.

There is anchorage in depths of about $6\frac{1}{2}$ fathoms (11^m9), mud, with
40 the cemetery bearing 312° and Talamone light-structure (*Lat.* $42^\circ 33'$ N., *Long.* $11^\circ 08' E.$) bearing 252° . Small vessels anchor in depths of about 4 fathoms (7^m3), about $1\frac{1}{2}$ cables eastward of the head of the mole.

Prohibited anchorage.—On account of the existence of submarine
45 telegraph cables, anchorage and fishing are prohibited in an area bounded by lines joining the following points:—Talamone light-structure; a position about half a mile 090° from Talamone light-structure; a position about three-quarters of a mile 180° from Talamone light-structure; and Talamone light-structure.

50 **Current.**—The current, especially during summer, sets eastward into the bay round the western entrance point. It is caused by the preponderance of the sea breeze, and often continues during the early hours of the morning while the land breeze is blowing, thus setting to windward. During fresh and settled south-easterly winds,

Charts 1780, 2158a, 2158b, 449.

Chart 158, plan of Talamone bay.

the current sets south-westward out of the bay past the western entrance point.

Chart 158.

Coast.—Torrente Osa enters the sea about $1\frac{1}{2}$ cables south-eastward of Torre Dogana, and from its mouth the coast sweeps southward in a wide curve for about 7 miles to Torre Santa Liberata, on a point on the northern side of Promontorio Argentario. The whole of this stretch of coast consists of a white sandy beach with low-lying land within it, and the northern part is backed by dense pine woods.

Fiume Albegna enters the sea about $3\frac{1}{4}$ miles south-south-eastward of the mouth of Torrente Osa, and on its south-eastern bank about a quarter of a mile within the entrance is Torre Saline, a massive square tower, 62 feet (18^m9) high, with some houses close to it. A bridge crosses the river close northward of the tower, and among trees on the opposite bank may be seen the village of Albegna, dominated by a tall and prominent silo, painted grey and white, with a flat roof and a yellow superstructure.

There are depths of about 5 fathoms (9^m1) about three-quarters of a mile offshore, and of 3 fathoms (5^m5) about 3 cables offshore. Small coasting craft anchor in depths of about $4\frac{1}{2}$ fathoms (8^m2), about $5\frac{1}{2}$ cables from the river mouth.

About $1\frac{1}{4}$ miles southward of Torre Saline is the northern end of Stagno di Orbetello, a salt lake, separated from the sea by Tombolo della Giannella, a narrow strip of land, mostly cultivated and dotted with isolated farmhouses. The lake, which has depths of from 7 to 10 feet (2^m1 to 3^m0) and abounds with fish, is divided into two parts by a tongue of land projecting from the north-eastern side and prolonged south-westward to join the opposite side by an artificial dyke. The city of Orbetello, which in 1947 had a population of 5,528, is situated at the extremity of the tongue of land; it is plainly visible from seaward over Tombolo della Giannella and may be identified by the prominent white square belfry of its cathedral, by a square tower surmounted by an iron framework structure, and by several chimneys.

Canale di Orbetello and approaches.—Canale di Orbetello is entered at the south-western corner of Stagno di Orbetello, about a quarter of a mile south-eastward of Torre Santa Liberata; this tower, circular and in ruins, with a group of houses close south-eastward of it, serves to identify the canal entrance. A short pier projects north-eastward from the coast between Torre Santa Liberata and the canal entrance, and two mooring buoys are moored close off the head of the pier. There is a considerable traffic here in the export of iron ore from local mines. The pier, which is served by the railway, is used for loading iron ore into lighters which take it to vessels in the roadstead; vessels anchor with two anchors, heading north-westward and secure their sterns to the mooring buoys. The bottom is good holding ground, but northerly winds may interrupt loading.

Canale di Orbetello, which leads to the city of that name, and to a factory (Lat. 42° 27' N., Long. 11° 15' E.) about 2 miles east-north-eastward of the city and at the root of the northern side of the tongue of land dividing the lake, is entered between two masonry moles; it is about 40 feet (12^m2) wide, with depths of 5 feet (1^m5), and is about $4\frac{1}{2}$ miles in length. A metal swing bridge, carrying a road, crosses the

Chart 158.

canal close within the entrance; in 1949, a wooden swing bridge temporarily replaced the metal one.

In the lake, the channel is plainly marked by a line of black, square wooden posts, on concrete bases, about 10 feet (3^m0) high; in-going traffic should pass these posts on the starboard hand, at a distance of from 16 to 20 feet (4^m9 to 6^m1). Abreast the city of Orbetello, an arm of the canal, which is marked on either side by small black cylindrical posts, leads to a landing pier in the city.

10 **Port facilities.**—Fresh provisions are available at Orbetello. Water can be supplied by water-boat to vessels anchored in the roadstead off the canal entrance.

There are numerous lighters and a few tugs at the canal entrance.

The main canal traffic consists of the importation of phosphates and 15 the export of chemical fertilizers.

Promontorio Argentario.—**Winds.**—Promontorio Argentario is situated on the south-western side of Stagno di Orbetello; it is much higher and more prominent than Promontorio di Piombino (page 292), and when seen from an offing appears as an island. Its coasts are 20 rocky, rugged, broken and steep-to. Monte Argentario, 2,083 feet (634^m9) high, and the highest point on the promontory, rises near its south-eastern coast about 3 miles southward of Torre Santa Liberata, and Poggio Canalone, a peak 1,952 feet (595^m0) high, rises about 3½ cables farther southward; from the similarity of their outline and 25 their short distance apart, these two summits appear as twin peaks when seen from westward or south-westward.

Torre Argenteria, tall, dark, square and slender, stands at an elevation of 830 feet (253^m0), on the summit of a hill about 1½ miles south-westward of Torre Santa Liberata, and from northward makes an 30 excellent landmark. A white square convent stands at an elevation of 853 feet (260^m0) among trees on a hill about 1½ miles south-south-eastward of Torre Santa Liberata, and another convent, also surrounded by trees, stands at an elevation of 1,073 feet (327^m0), about 4 cables farther west-north-westward.

35 In summer, the mountains are generally obscured by haze. In winter, Monte Amiata or di Santa Fiora, 5,689 feet (1,734^m0) high, with two peaks, situated about 35 miles north-eastward of Torre Santa Liberata, shows clearly in fine weather; with strong south-easterly winds, it is covered with mist. If southerly winds are blowing 40 and Monte Amiata is covered, should it clear for a time, a change to strong northerly and north-easterly winds is probable; in this case a cloud, locally called “un baffo,” remains on the mountain, and if it is directed southward, northerly winds will predominate, but if south-westward, north-easterly winds.

45 *Chart 158, plan of Port Santo Stefano.*

Porto Santo Stefano.—**Lights.**—The town of Porto Santo Stefano, which in 1947 had a population of 7,412, lies at the head of Rada di Santo Stefano, a bight entered between Punta Nera, situated about 9 cables westward of Torre Santa Liberata, and Punta della 50 Madonnetta, about one mile west-north-westward. The town lies at the foot of some steep green hills on a slight projection of the coast about 6 cables westward of Punta Nera (*Lat.* 42° 26' N., *Long.* 11° 08' E.), and it is overlooked by a small old fortress in front of which is the parochial church which has a yellowish square belfry.

Charts 158, 1780, 676, 2158a, 2158b, 449.

Chart 158, plan of Port Santo Stefano.

The harbour is divided into two parts by Molo Acetina, a mole extending about one cable east-north-eastward from the south-eastern extremity of the projection of the coast containing the town. Porto del Valle, the south-eastern part, is entered between the head of Molo Acetina and a point on the coast about $1\frac{1}{2}$ cables east-south-eastward ; Porto Vecchio, the north-western part, is entered between the head of Molo Acetina and the head of Moletto della Sanità (*Lat.* $42^{\circ} 26' N.$, *Long.* $11^{\circ} 07' E.$), a short mole which projects about 200 feet (61^m0) eastward from the coast about $3\frac{1}{4}$ cables farther north-westward. 10 Vessels should give the head of Molo Acetina a berth of at least 50 feet (15^m2).

A light is exhibited, at an elevation of 16 feet (4^m9), from a red iron framework structure on a concrete base, 16 feet (4^m9) in height, situated on the head of Molo Acetina. 15

A light is exhibited, at an elevation of 18 feet (5^m5), from a round iron column on a masonry base, 15 feet (4^m6) in height, situated on the head of Moletto della Sanità.

Porto del Valle.—Quayage.—Depths.—The southern side of Molo Acetina and the western side of Porto del Valle are lined with 20 quays, and at its southern end is Darsena del Valle, a rectangular camber, about half a cable long and a quarter of a cable wide, which is entered between two jetties.

Vessels of a draught not exceeding 16 feet (4^m9), can berth alongside Molo Acetina ; larger vessels berth end-on to this mole, or to 25 Banchina dello Scalo Colombo or Banchina del Piazzale Candi, with their sterns at a distance of about 33 feet (10^m1) from the face of the quays ; the two latter quays extend between the root of Molo Acetina and the entrance to Darsena del Valle.

There are general depths of from 25 to 30 feet (7^m6 to 9^m1) in Porto 30 del Valle, and there are depths of 12 feet (3^m7) in Darsena del Valle ; the latter is reserved for berthing lighters and for small craft under repair.

Porto Vecchio.—Quayage.—Depths.—The western and south-western sides of Porto Vecchio are lined with quays. Banchina della 35 Pilarella extends about $1\frac{1}{4}$ cables southward from the root of Moletto della Sanità ; the daily mail steamer to Isola del Giglio berths at its northern part. The southern part of this quay forms the western side of a small cove, the southern and eastern sides of which are formed, respectively, by Banchina Domizio and Banchina del Piccolo Scalo 40 Domizio ; there are depths of about 13 feet (4^m0) at a distance of about 230 feet (70^m1) off these quays, whence the depths increase rapidly to 5 and 10 fathoms (9^m1 and 18^m3), and this steeply sloping bottom has great advantages as holding ground during north-easterly winds. At the south-eastern end of Porto Vecchio, Banchina Acetina 45 extends about half a cable north-westward from the root of Molo Acetina.

Caution.—Porto Santo Stefano suffered extensive war damage, and in 1949 there were numerous wrecks and obstructions. Entry should not be attempted without local knowledge. 50

An obstruction, indicated by a pecked line on the plan, lies between about one and three cables eastward of the head of Moletto della Sanità.

Anchorage.—There is anchorage in Rada di Santo Stefano, about

Charts 158, 1780, 2158a, 2158b, 449.

Chart 158, plan of Port Santo Stefano.

a quarter of a mile northward of the head of Molo Acetina, in depths of about 14 fathoms (25^m6), mud, with Punta Nera (*Lat.* 42° 26' N., *Long.* 11° 08' E.) bearing 115° and the belfry of the parochial church bearing 233°, but care must be taken to avoid the obstruction mentioned above.

Rada di Santo Stefano is sheltered from all winds except those from north-west through north to east. North-westerly winds are often strong and raise a considerable sea in the roadstead; winds from between north and east, and especially north-north-easterly winds, are dangerous to small craft berthed at the quays in Porto Vecchio.

Port facilities.—Limited quantities of fuel oil and of petrol are maintained.

Moderate quantities of fresh provisions are available. Small quantities of fresh water may be obtained alongside Banchina dello Scalo Colombo in Porto del Valle.

Repairs to small craft can be undertaken in Darsena del Valle; there are several patent slips in the Darsena, the largest of which can take vessels up to 148 feet (45^m1) in length.

The nearest hospital is at Orbetello (page 332).

There is daily sea communication with Isola del Giglio.

Chart 158.

Coast.—Light.—Signal station.—Punta della Madonnetta may be identified by a small white pillar on the extremity of the point and by a dark square column, surmounted by a statue, on the high land within it. Punta Lividonia, about 4 cables westward of Punta della Madonnetta, and the north-western extremity of Promontorio Argentario, may be identified by a dark square tower about 1½ cables within the point, and by the building of the light-structures.

A light is exhibited, at an elevation of 154 feet (46^m9), from a white circular tower attached to a red two-storeyed building, 39 feet (11^m9) in height, situated on Punta Lividonia; close to it and at a lower elevation, is the old light-structure, consisting of a similar tower and dwelling but painted white.

From Punta Lividonia, the coast trends about 6 cables south-westward to Punta Cacciarella, and thence a further 7 cables south-westward to Punta Calagrande. About one cable south-eastward of Punta Cacciarella is a tower of the same name, and close northward of the tower is Villa Feltrinelli, a prominent white building of many storeys with arches, and a square superstructure with a red roof.

A signal station, consisting of a building painted in black and white chequers, and surrounded by a group of light-coloured huts with red roofs, stands at an elevation of 348 feet (106^m1) about one cable south-south-eastward of Punta Calagrande; storm warning signals are displayed, see page 11.

Scoglio Argentarola.—This above-water rock lies about 7 cables south-south-westward of Punta Calagrande and about 2½ cables off-shore; it is dark, rounded and steep except at its northern end, where a spit with a depth of 4½ fathoms (7^m8) at its extremity extends about half a cable from it. There are depths of over 20 fathoms (36^m6) in the fairway of the passage between the rock and the coast of the mainland.

Chart 3902.

Coast. — Landmarks and dangers. — Submarine telegraph

Charts 158, 1780, 676, 2158a, 2158b, 449.

Chart 3902.

cables.—From Punta Calagrande (*Lat.* 42° 26' N., *Long.* 11° 05' E.), the coast trends about 1½ miles southward to Punta del Bove. About midway along this stretch is Torre Calamoresca, an old, grey, square and very dilapidated tower, standing on a point of the same name. 5
Costa dei Ronconali, a long rocky ridge, about 1,148 feet (349^m9) high, runs parallel with this stretch of coast; there are two saddles near the centre of the ridge and a tall, light-coloured wooden building stands at its northern end, about 6 cables eastward of Torre Calamoresca, and is prominent from seaward. 10

On the steep rocky coast about 2 cables south-eastward of Punta del Bove is a light-coloured patch, above which, at an elevation of 377 feet (114^m9), is Torre Calapiatti, a circular, well-preserved tower. Secca Calapiatti, a shoal, awash, lies about 2¾ cables southward of Torre Calapiatti and about one cable offshore. The eastern extremity 15 of Scoglio Argentarola, bearing more than 344° and open westward of Punta del Bove, leads westward of this shoal.

Capo d'Uomo, about three-quarters of a mile south-south-eastward of Torre Calapiatti, is steep and bare and is one of the most distinctive points of the promontory. A prominent but very dilapidated tower 20 stands at an elevation of 1,178 feet (359^m0), about 3¾ cables east-north-eastward of the cape. Rocky shoals fringe the northern side of Capo d'Uomo and extend about half a cable offshore. Torre della Maddalena, square and dilapidated, stands at an elevation of 308 feet (93^m9), on the coast about three-quarters of a mile east-south-eastward of 25 Capo d'Uomo.

From Capo d'Uomo, the coast trends south-eastward for about 3¼ miles to Punta di Torre Ciana, the steep, rocky southern extremity of Promontorio Argentario; Torre Ciana, a round tower with a short wall behind it, stands close within the point. Scoglio Isola Rossa, 30 lying close inshore about 1½ miles north-westward of Punta di Torre Ciana, is not easy to distinguish from south-westward, being the same colour as the coast behind it. A rocky spit, on which are two above-water rocks, extends about 1¼ cables southward of this rock; the passage between the rock and the coast is foul. Torre delle Cannelle, 35 a grey square tower, surrounded by a high wall, stands at an elevation of 121 feet (36^m9), on the coast about 5½ cables eastward of Scoglio Isola Rossa.

Submarine telegraph cables are landed near Torre delle Cannelle. Their direction is indicated by pecked lines on Chart 158 and is shown 40 by the alignment of beacons. Anchorage is prohibited in their vicinity in an area extending about one mile off the coast between Torre delle Cannelle and Punta di Torre Ciana.

Punta Avoltore, the south-eastern extremity of Promontorio Argentario, is situated about 1½ miles eastward of Punta di Torre Ciana; it 45 consists of steep, rugged cliffs, rising sheer from the sea to an elevation of 745 feet (227^m1) and surmounted by a massive, square tower which makes an excellent landmark.

Chart 158, plan of Port Ercole.

From Punta Avoltore, the coast trends north-eastward for about 50 1¾ miles to the eastern extremity of Colle della Rocca, a hill 348 feet (106^m0) high, on the southern side of the entrance to Porto Ercole. Fortino Stella stands on a hill 515 feet (157^m0) high, about 1¼ miles north-north-eastward of Punta Avoltore and about 2 cables inland;

Charts 3902, 158, 1780, 676, 2158a, 2158b, 449.

Chart 158, plan of Port Ercole.

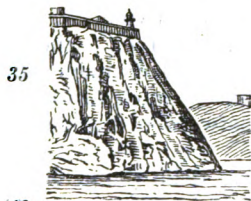
although not large, it is light-coloured and prominent, and consists of a central keep rising above a semi-circular bastion.

L'Isolotto (*Lat.* $42^{\circ} 23' N.$, *Long.* $11^{\circ} 13' E.$) is an islet lying about $1\frac{1}{4}$ miles north-eastward of Punta Avoltore and about 2 cables offshore; it is 240 feet (73^m1) high at its rounded north-western end, whence it slopes gradually down to its south-eastern extremity. A shoal, over which there is a depth of 5 feet (1^m5), lies in the passage between the islet and the coast.

Porto Ercole.—Off-lying danger.—Porto Ercole, sometimes spelt Port' Ercole, is a small inlet entered between the north-eastern extremity of Colle della Rocca, about half a mile northward of the northern extremity of L'Isolotto, and Punta Santa Caterina, about $3\frac{1}{2}$ cables northward. Punta Santa Caterina is the eastern extremity of Monte San Filippo, about 3 cables westward, and this hill and Colle della Rocca, when viewed from eastward, appear rounded and of about equal elevation; they stand out prominently from the higher land westward of which they are spurs, and both are crowned by ancient forts. Forte Santa Caterina, a smaller, square fort, stands close within the point of that name, with Molinaccio, an old round windmill, close north-westward of it. *See view facing page 346.*

Porto Ercole, which in 1947 had a population of about 2,500, is divided into two parts. The village of Porto Ercole proper is situated on the southern shore of the inlet close within the entrance and on the northern slopes of Colle della Rocca below the fort, and the village of Grotte is situated on a beach at the north-western corner of the inlet; a thick wood covers the ground between these villages. Fishing is the main industry of Porto Ercole.

Secca Santa Caterina lies about $1\frac{1}{2}$ cables eastward of Punta Santa Caterina, and has a least depth of $2\frac{1}{4}$ fathoms (5^m0) over it, with depths of from 7 to 8 fathoms (12^m8 to 14^m6) close around it. The northern extremity of Forte Monte San Filippo bearing more than 285° and open southward of Forte Santa Caterina, leads southward, and the north-western extremity of L'Isolotto bearing 207° and open south-eastward of the eastern extremity of Colle della Rocca leads eastward of this shoal.



Forte La Rocca light-tower.

Lights.—A light is exhibited, at an elevation of 300 feet (91^m4), from a white circular tower, 62 feet (18^m9) in height, situated on the eastern-most bastion of Forte La Rocca.

A light is exhibited, at an elevation of 43 feet (13^m1), from a white, circular masonry tower, 9 feet (2^m7) in height, situated on the northern bastion of Santa Barbara battery, about one cable north-westward of Forte La Rocca light-structure.

Anchorage.—Vessels may obtain anchorage in depths of from 7 to 8 fathoms (12^m8 to 14^m6), sand, with the centre of Forte San Filippo bearing 300° , and the eastern extremity of Colle della Rocca in line with the south-eastern extremity of L'Isolotto bearing about 176° .

Small vessels with local knowledge, especially during southerly and south-easterly winds, anchor close northward of the village of Porto Ercole and secure their sterns to rings on the rocky shore. Vessels not exceeding 10 feet (3^m0) in draught may anchor in depths of about $4\frac{1}{2}$ fathoms (8^m2), just north-eastward of the alignment of the light-

Chart 158, plan of Port Ercole.

structures of Forte La Rocca and Santa Barbara battery, and about half a cable distant from the latter; in this position, with sterns secured to the shore, they can work cargo even during strong east-south-easterly winds which are the most dangerous in this locality. 5

Harbour.—Quayage.—Caution.—Moletto della Sanità (*Lat.* 42° 23' N., *Long.* 11° 12' E.) projects a short distance north-eastward from the south-eastern end of the head of the harbour, about 1½ cables west-south-westward of the light-structure on Santa Barbara battery. Moletto di Grotte projects about 100 feet (30^m5) eastward from the shore close southward of Grotte village, and the shore between the moles is quayed for a distance of 640 feet (795^m1) from the root of Moletto della Sanità. 10

Porto Ercole suffered extensive war damage. In 1947, Moletto della Sanità was partly, and Moletto di Grotte was completely, destroyed; 15 masonry blocks from the latter mole lay as much as 100 feet (30^m5) offshore and were dangerous to boats. At that date, entry to the harbour was prohibited to commercial vessels on account of the existence of mines.

In 1950, it was reported that the work of rebuilding Moletto di Grotte 20 was nearing completion and that an approach channel to that mole, about 90 yards (82^m3) wide, had been dredged to a depth of 13 feet (4^m0). It was also reported that the quay lining the shore northward of the root of Moletto della Sanità had been extended to the root of the new Moletto di Grotte. 25

Port facilities—Fresh provisions and fresh water are scarce; the former may be obtained from Orbetello (page 332), with which town there is daily automobile service.

There is a small patent slip near Moletto di Grotte.

Fishing nets.—Fishing nets extend about 4½ cables in an east- 30 north easterly direction from a position on the coast about a quarter of a mile north-westward of Punta Santa Caterina.

Chart 3902.

Coast.—Anchorage.—A small cove named Cala Galera is entered between Punta Santa Caterina and Punta Pertuso, about half a mile 35 northward. From the latter point, Tombolo di Feniglia, a low and narrow neck of land with a sandy beach on its southern side, trends eastward in a wide curve for about 3½ miles to Punta Ansedonia, and separates the south-eastern part of Stagno di Orbetello from the sea; it is uncultivated and uninhabited. On a clear day, the high towers in 40 the vicinity of Talamone, especially Torre di Capo d'Uomo (page 329), can be clearly seen over Stagno di Orbetello from a position eastward of Porto Ercole.

Punta Ansedonia is the southern extremity of a moderately high promontory with steep and rocky sides, interposed between the beach 45 of Tombolo di Feniglia and another long stretch of beach eastward; it is surmounted by the ruins of an ancient Etruscan city which are partly hidden by dense undergrowth. Torre San Pancrazio, light-coloured and circular, stands on the south-western extremity of the promontory, and Torre della Regina, a square tower with the upper 50 part broken away, stands on its south-eastern extremity. Both towers are prominent from seaward. Torre Tagliata, resembling a fortress but now used as a dwelling house, is the largest of a group of houses standing on the coast close eastward of the promontory.

Charts 158, 676, 2158a, 2158b, 449.

Chart 3902.

In fine settled weather small vessels with local knowledge can obtain anchorage eastward of Torre della Regina ; there are depths of about 13 feet (4^m0) about one cable from the rocky coast and of 10 feet (3^m0) about half a cable offshore. A hawser should be taken ashore and the vessel hauled stern to wind ; vessels thus moored may ride out fresh north-westerly winds.

Off-lying danger.—Formica di Burano, a low black rock, lies about 1½ miles south-south-eastward of Torre della Regina and must be given a berth of at least 3 cables. It is covered by the red sector of Forte La Rocca light, northward of the bearing of 285°.

Coast.—Dangers.—Anchorage.—From Punta Ansedonia (*Lat. 42° 24' N., Long. 11° 17' E.*), the coast trends south-eastward for about 30 miles to Civitavecchia, and is low and sandy ; except off Punta Morelle, about midway along this stretch, it may be safely approached to a distance of about one mile.

Lago di Burano, a salt lake separated from the sea by a narrow strip of land, runs parallel with the coast for about 2 miles from a position about 2½ miles eastward of Torre della Regina ; a canal runs from the western end of this lake to a position close eastward of Torre della Regina, where it enters the sea.

Cascina di Macchiatonda, a prominent yellowish building with a tiled roof, stands on the beach about 2½ miles eastward of Torre della Regina ; Torre Buranaccio, low, massive and half hidden by sand dunes, stands on the beach about 1½ miles farther eastward.

Capalbio (chart 158), a village situated at an elevation of 686 feet (209^m1) on a conical hill about 4 miles north-north-eastward of Torre Buranaccio, is prominent and from an offing appears as a white patch, dominated by a square tower.



Torre di Montalto.

Torre di Montalto, a square brick tower at the south-eastern end of a long building, stands about 9½ miles east-south-eastward of Torre Buranaccio, on the southern bank of Fiume Fiora, close within its mouth. The village of Montalto di Castro is situated at an elevation of 151 feet (46^m9)

about 2 miles north-eastward of Torre di Montalto : it may be identified by its dark church with a prominent belfry and by a small castle with two reddish towers.

Between Torre di Montalto and Punta Morelle, a low, sandy and not very salient point, about 1½ miles south-eastward, the coast is fronted by a rocky bank, the outermost rock on which has a depth of 4 fathoms (7^m3) over it, and lies about 1½ miles southward of Torre di Montalto.

There are depths of about 9 fathoms (16^m5) about one mile offshore south-westward and southward of the mouth of Fiume Fiora. Vessels with local knowledge can obtain anchorage, in depths of about 6½ fathoms (11^m9), about half a mile offshore. There are numerous heaps of charcoal on the beach south-eastward of the mouth of Fiume Fiora ; in summer the charcoal is loaded into coasting craft which anchor close off the beach for that purpose.

Porto Clementino, a group of buildings on the coast about 7½ miles south-eastward of Punta Morelle, may be identified by the ruins of

Chart 3902.

a penal establishment, a square, light yellow but not very prominent building, close in front of a church; the ruins of a fort, partly in the sea, lie near it. In front of the penal establishment is a small mole with landing steps, its head partially submerged. Close southward of Porto Clementino are some salt pans, in the middle of which a group of houses and sheds and a tall chimney may be seen amongst trees. A shoal with a depth of 2 feet (0^m6) over it lies about one cable offshore, north-westward of the mole.

There are depths of about 3 fathoms (5^m5), about 1½ cables offshore, and of about 5½ fathoms (10^m1), about 3½ cables offshore, in the vicinity of the salt pans; if landing on the beach here, care must be exercised to avoid the rocks which fringe it.

The town of Tarquinia, which had a population of 8,118 in 1947, stands on a plateau about 3½ miles north-eastward of Porto Clementino at an elevation of 489 feet (149^m0); there are numerous towers, mostly square and slender, in the town, and at its eastern end is a prominent church. A large red building, without windows, stands about midway between Tarquinia and Porto Clementino and is prominent from seaward.

Torrente Mignone flows into a shallow bight in the coast (Lat. 42° 11' N., Long. 11° 44' E.), about 2½ miles south-south-eastward of Porto Clementino; it is navigable by small boats for some distance above its mouth. A 1½-fathom (2^m3) rocky patch lies about 6 cables south-westward of the mouth of Torrente Mignone.

A rocky bank on which the depths are less than 3 fathoms (5^m5) fronts the coast between the mouth of Torrente Mignone and the town of Civitavecchia, about 5½ miles south-south-eastward and extends as much as three-quarters of a mile offshore in places; vessels should give this stretch of coast a berth of at least one mile.

Torre Valdaliga, square and well-preserved, stands on the coast about 3½ miles south-south-eastward of the mouth of Torrente Mignone and about 2 miles north-north-westward of the entrance to Porto di Civitavecchia.

Chart 1841, plan of Porto di Civita Vecchia.

PORTO DI CIVITAVECCHIA.—General remarks.—The entrance to Porto di Civitavecchia lies about 2 miles south-south-eastward of Torre Valdaliga and the town lies on a flat plain on the eastern side of the harbour. The town of Tarquinia, *see* above, about 10 miles northward, and the low and salient Capo Linaro, about 4 miles south-south-eastward of the harbour, may assist identification to vessels from northward and southward, respectively.

The following are good landmarks on the northern side of the harbour: The cemetery, enclosed by a stone wall, situated on the coast, about 6 cables northward of the entrance to the harbour; a tall black chimney about 1½ cables southward of the cemetery; a convict prison, surrounded by a high wall with watch towers, situated close southward of the black chimney; Cappuccini church, yellowish in colour, situated at an elevation of 200 feet (61^m0) on a hill about three-quarters of a mile eastward of the black chimney; and the four chimneys of a cement factory, close together in a line about 3 cables east-south-eastward of the convict prison.

In the harbour, the silos and other large buildings on Molo del

Charts 3902, 158, 1841, 676, 2158a, 2158b, 449.

Chart 1841, plan of Porto di Civita Vecchia.

Bicchiere, about 4 cables south-south-eastward of the entrance, are prominent, as also is the large square Forte di Michelangelo, with a tower at each corner, situated close eastward of Molo del Bicchiere. About 5 half a mile south-eastward of Forte di Michelangelo, and at the south-eastern end of the town, is a church with a prominent square brick belfry.

The harbour is protected by a long outer mole which extends westward and north-westward for about three-quarters of a mile from Forte di Michelangelo; the outer part of this mole is called Antemurale Colombo, the part next south-eastward, Antemurale Traiano, and the inner part, which is protected by a breakwater about $1\frac{1}{2}$ cables long, parallel with, and outside it, is called Antemurale Umberto I. In 1951, work was in progress extending the head of Antemurale Colombo 15 in a west-north-westerly direction.

The outer entrance to the port lies between the head of Antemurale Colombo and the north-western extremity of the head of Molo Amerigo Vespucci, which extends south-westward from the coast north-westward of the town. The inner entrance lies between the head of 20 Sporgente del Marzocco, a spur extending northward from the junction of Antemurale Colombo and Antemurale Traiano, and the south-eastern extremity of the head of Molo Amerigo Vespucci.

Light.—Civitavecchia light is exhibited, at an elevation of 328 feet (100^m0), from a grey circular tower attached to a white dwelling, 25 69 feet (21^m0) in height, situated about $1\frac{1}{2}$ miles eastward of the harbour entrance.

Signal station.—**Pilotage.**—A signal station (*Lat.* 42° 06' N., *Long* 11° 47' E.) with a flagstaff stands on the roof of the Captain of the Port's office, situated on the eastern side of Darsena Romana, about 30 $4\frac{1}{2}$ cables eastward of the head of Antemurale Colombo; storm-warning signals are displayed, *see* page 11.

Pilots work within a radius of 4 miles of the port, except in bad weather. The pilot station is at Forte del Marzocco, situated at the junction of Antemurale Colombo and Antemurale Traiano. Pilots 35 board vessels from tugs.

Entrances.—**Lights.**—**Light-buoys.**—The outer entrance between the head of Antemurale Colombo and the north-western extremity of Molo A. Vespucci is about $1\frac{1}{2}$ cables wide, faces northward and has depths in it of from $4\frac{1}{2}$ to 8 fathoms (8^m2 to 14^m6). The inner entrance 40 between the head of Sporgente del Marzocco and the south-eastern extremity of Molo A. Vespucci is about three-quarters of a cable wide and has depths of from 29 to 31 feet (8^m8 to 9^m4). In 1944, an area which included both entrances was swept to a depth of 27 feet (8^m2).

A light is exhibited, at an elevation of 59 feet (18^m0), from a circular 45 stone tower, 52 feet (15^m8) in height, situated on the head of Antemurale Colombo, on the western side of the outer entrance.

A light-buoy, exhibiting a *green flashing* light, showing a *short flash every three seconds*, is moored about three-quarters of a cable west-north-westward of the light-structure on the head of Antemurale 50 Colombo, and marks the north-western end of the works in progress.

A light-buoy exhibiting a *red flashing* light, showing a *short flash every three seconds*, is moored on the eastern side of the outer entrance, about $1\frac{1}{2}$ cables eastward of the light-structure on the head of Antemurale Colombo.

Chart 1841, plan of Porto di Civita Vecchia.

Two lights, disposed vertically, are exhibited from the head of Molo A. Vespucci.

A light is exhibited, at an elevation of 28 feet (8^m5), from a black iron structure on a black tower, 16 feet (4^m9) in height, situated on the head of Sporgente del Marzocco, on the southern side of the inner entrance.

A light is exhibited, at an elevation of 26 feet (7^m9), from a red iron structure on a red tower, 16 feet (4^m9) in height, situated on the head of Molo del Lazzaretto, about one cable eastward of the head of Sporgente del Marzocco.

Harbour.—Basins.—Porto di Civitavecchia comprises five basins named Avamporto, Bacino A. Vespucci, Bacino Michelangelo, Darsena Umberto I and Darsena Romano.

The Avamporto lies between the outer and inner entrances and north-eastward of Antemurale Colombo; it has general depths of from 4½ to 7 fathoms (8^m2 to 12^m8).

Bacino A. Vespucci lies north-eastward of the inner entrance, between Molo A. Vespucci and Molo del Lazzaretto, a mole extending south-westward from the north-eastern side of the harbour, about one cable south-eastward of Molo A. Vespucci; there are general depths of from 4½ to 5 fathoms (8^m2 to 9^m1) in this basin.

Bacino Michelangelo is entered between Sporgente del Marzocco and Molo del Lazzaretto, and comprises the whole harbour south-eastward of these moles with the exception of the southern corner. Molo del Bicchiere projects about 1½ cables north-westward into the basin from close westward of Forte di Michelangelo, and Pontile Sardegna projects about half a cable westward into the basin from its eastern side. There are general depths of from 3½ to 5 fathoms (6^m4 to 9^m1) in this basin.

Darsena Umberto I (*Lat.* 42° 05' N., *Long.* 11° 47' E.) lies at the southern corner of the harbour between Molo del Bicchiere and Antemurale Umberto I; there are general depths of about 4½ fathoms (8^m2) in this basin.

Darsena Romana, situated at the north-eastern corner of the harbour, is entered from the northern side of Bacino Michelangelo; the entrance is 50 feet (15^m2) wide, with depths of from 10 to 13 feet (3^m0 to 4^m0) in it. Within the entrance, there are general depths of from 2½ to 3 fathoms (4^m6 to 5^m5) in the basin.

The basins are all lined with quays; vessels normally berth end-on to the quays and cargo is loaded from, or unloaded into, lighters, except for colliers and vessels carrying cereals which berth alongside quays when their draught permits. The bottom in the basins is good holding ground throughout.

The inner part of the port is sheltered from all winds except those from north-westward, which, when strong, raise a slight sea, but in the Avamporto and Bacino A. Vespucci, strong south-westerly winds raise a sea which strains the moorings of vessels berthed in these basins to a greater extent than north-westerly winds.

Except during gales, it is always possible for vessels not exceeding 27 feet (8^m2) in draught to enter the Avamporto, and in calm weather, vessels of this draught may enter the inner harbour provided there is sufficient clear space in the Avamporto for them to turn round in that basin, as there is not sufficient room in the inner harbour for deep-draught vessels to carry out this manœuvre.

Charts 3902, 158, 1780, 676, 2158a, 2158b, 449.

Chart 1841, plan of Porto di Civita Vecchia.

Caution.—Quayage.—The harbour suffered extensive war damage and there are numerous wrecks and obstructions. Entry should not be attempted without local knowledge. Repair work is in progress, and in 1950 the conditions at the moles and quays was reported to be as follows :—

Avamporto.—Vessels unable to enter the inner harbour owing to their draught can berth diagonally end-on to the inner arm of Antemurale Colombo. Vessels berth heading about north-north-westward so as to be able to work cargo from both sides without obstructing the passage of vessels through the Avamporto.

Bacino A. Vespucci.—Banchina A. Vespucci, the quay on the south-eastern side of the mole of that name, is available for a length of 541 feet (164^m9) from the south-western end, with a least depth of 26 feet (7^m9) alongside it. Banchina Santa Rosa, a quay extending south-eastward from the root of Molo A. Vespucci, is still under repair but a vessel may be berthed stern-on to it. Molo Lazzaretto, which forms the south-eastern side of this basin, cannot be used owing to war damage.

Bacino Michelangelo.—Banchina Traianea, the quay on the north-eastern side of Antemurale Traiano, is available for a length of about 600 feet (182^m9), with a least depth of 26 feet (7^m9) alongside it, and the area fronting this quay has been dredged to a depth of 30 feet (9^m1). On the eastern side of the basin, Pontile Sardegna has been completely repaired and has a least depth of 20 feet (6^m1) alongside it. Calata P. Tommaso, the quay extending northward from the root of Pontile Sardegna, is available for a length of 456 feet (139^m0), with depths of from 8 to 15 feet (2^m4 to 4^m6) alongside it.

Banchina Bernina, the quay extending southward from the root of Pontile Sardegna, is available for a length of 143 feet (43^m6) from its northern end. Banchina Michelangelo, the quay forming the southern side of the basin, is available for its whole length of 646 feet (196^m9) with a least depth of 20 feet (6^m1) alongside it. Banchina Guglielmotti, the quay forming the north-eastern side of Molo del Bicchiere, is available for a length of 672 feet (204^m8) with a least depth of 24 feet (7^m3) alongside it. The remaining quays in Bacino Michelangelo, which are on the northern side of the basin, cannot be used owing to war damage.

Darsena Umberto I.—Banchina A. Cialdi (*Lat.* 42° 05' N., *Long.* 11° 47' E.), the quay on the south-western side of Molo del Bicchiere, is available throughout its length of about 720 feet (219^m5), with depths of about 26 feet (7^m9) alongside it. The remaining quays in this basin cannot be used owing to war damage.

Darsena Romana.—All quays in this basin are unusable owing to war damage, and there are numerous wrecks of lighters still in the basin.

Anchorage.—Directions.—Anchorage outside the harbour is subject to weather conditions but the holding ground is good everywhere. Vessels anchored should be ready to weigh at short notice as strong onshore winds quickly raise a heavy sea.

Ancoraggi del Cimitero (chart 3902), the anchorages recommended, lie westward of the cemetery, about half a mile northward of the head of Antemurale Colombo. Large vessels should anchor, in depths of about 16 fathoms (29^m3), weed, sand and mud, with the tall black

Charts 3902, 1841, 158, 676, 2158a, 2158b, 449.

Chart 1481, plan of Porto di Civita Vecchia.

chimney about $1\frac{1}{2}$ cables southward of the cemetery bearing about 089° and in line with Cappuccini church, and the light-structure on the head of Antemurale Colombo bearing 133° . Vessels of moderate size should anchor in depths of about 11 fathoms (20^m 1), with a yellow, semi-circular building in the cemetery bearing 070° , and the above-mentioned light-structure bearing 148° ; small craft may anchor, in depths of about 9 fathoms (16^m 5), with the yellow building in the cemetery bearing 070° and the above-mentioned light-structure bearing 170° .

The bastion in the middle of the north-western side of Forte di Michelangelo, bearing 119° and open south-westward of the head of Molo del Lazzaretto, leads clear of dangers up to the entrance to the port.

Currents.—Along the coast in the vicinity of Porto di Civitavecchia, the current follows the direction of the wind and as a consequence is usually north-west-going, but is of no great strength.

Town.—Port facilities.—The town of Civitavecchia, which had a population of about 37,000 in 1947, has numerous fine modern buildings and new straight roads. It is the principal supply port for Rome, and is also the centre of sea communication with Sardinia.

The principal industries are the manufacture of cement, fertilisers, firebricks, soaps and alum, and there is also a large fishing industry.

The chief imports are coal, iron ore, salt, frozen meat, wine, fish, timber, grain, phosphates and petroleum. The principal exports are cement, alum, cheese and charcoal. There is a considerable trade with Sardinia.

There is a civil hospital of moderate size in the town.

Moderate quantities of coal, fuel oil and petrol are stocked.

Fresh provisions are plentiful and fresh water is laid on to all quays.

Repairs to moderate-sized vessels can be undertaken. There are four patent slips in the harbour, the largest of which has a capacity of 1,000 tons.

In 1950, there were seven mobile cranes available, the largest having a lifting capacity of 6 tons.

There are numerous lighters and a few small tugs in the port.

There is regular sea communication with Sardinia and with other Mediterranean ports.

Deratisation.—Deratisation can be carried out, *see* page 18.

Chart 3902.

COAST.—Anchorage.—Dangers.—From the root of the outer mole at Porto di Civitavecchia (*Lat. $42^\circ 05' N.$, Long. $11^\circ 48' E.$*), the coast, which is fringed with rocks and should be given a berth of half a mile, trends about 4 miles south-south-eastward to Capo Linaro. Torre Marangone, a massive grey, square tower, stands close within the coast about 2 miles south-south-eastward of Porto di Civitavecchia; a masonry bridge with three arches stands close south-eastward of the tower, and a concrete and iron pier, with a crane on its head, projects about a quarter of a cable from the coast between the bridge and the tower. Mineral ore from local mines is loaded into vessels at the pier, which is reserved for this purpose.

Capo Linaro is low, bare and fringed by a rocky bank; it should not be approached within a distance of $3\frac{1}{4}$ cables.

Charts 3902, 1841, 158, 676, 2158a, 2158b, 449.

Chart 3902.

Between Capo Linaro and the mouth of Fiume Tevere, about 23 miles south-eastward, the low, level coast slopes gently down to the sea; the northern part of this stretch is bare while the southern part is covered with pine woods. Several small streams enter the sea along this stretch.

About $1\frac{1}{2}$ miles eastward of Capo Linaro is the small town and popular holiday resort of Santa Marinella, which in 1947 had a population of about 3,800. It consists of a long line of villas stretched along the beach, with Villa Odescalchi, an ancient grey building with a tower surmounted by a cupola, near its eastern end. A mole projects southward from the beach in front of Villa Odescalchi, with another shorter mole projecting eastward from near its head.

Vessels with local knowledge may obtain anchorage, in depths of $6\frac{1}{2}$ fathoms (11^m9), weed, south-eastward of Villa Odescalchi, about a quarter of a mile offshore. Small vessels may obtain anchorage in depths of about 5 fathoms (9^m1), with Villa Odescalchi bearing 300° at a convenient distance from the head of the short mole extending eastward; there are depths of 25 feet (7^m6) within a few feet of the head of this mole.

The remains of a stout high wall may be seen running parallel with the coast at a short distance offshore between Villa Odescalchi and a cement factory close eastward of it. Landing may be effected on the beach behind this wall which may be reached through some gaps in the wall which are accessible to boats.

On the coast about 4 miles east-south-eastward of Santa Marinella, is the village of Santa Severa which contains a large castle surrounded by a rectangular wall with a crenellated tower at each corner, and with a group of houses within the wall. On the beach close north-westward of the castle is a large, light-coloured and modern building, with several small houses with red roofs around it. A short distance north-north-eastward of the castle is a hill with a bare, white summit which stands out distinctly from the surrounding hills and is prominent from seaward.

In front of the castle and about three-quarters of a cable offshore are several rocks which afford protection from the sea. For about 2 miles north-westward of the castle, the coast is fronted by a bank with depths of 5 fathoms (9^m1) and less on it, which extends as much as $1\frac{1}{2}$ miles offshore, and detached patches, with depths of $4\frac{3}{4}$ and $5\frac{3}{4}$ fathoms (8^m7 and 10^m5) over them, lie about $1\frac{3}{4}$ and 2 miles, respectively, west-south-westward of the castle.

Vessels with local knowledge may obtain anchorage, in depths of from 6 to $6\frac{1}{2}$ fathoms (11^m0 to 11^m9), about a quarter of a mile south-westward of the castle.

Macchia Tonda, a wood of low trees, is situated about $1\frac{1}{2}$ miles south-eastward of Santa Severa (*Lat.* $42^\circ 01' N.$, *Long.* $11^\circ 58' E.$); a prominent reddish-coloured villa, surrounded by higher trees, stands close northward of the wood, and close eastward of the villa is a factory with a tall brick chimney. Monte Santo, with a prominent rocky projection on its north-western side and the ruins of a circular fort on its summit, rises to an elevation of 1,411 feet (430^m1) about $4\frac{1}{4}$ miles east-north-eastward of Santa Severa. On the saddle between this mountain and Monte Sassone, 820 feet (249^m9) high, situated about one mile westward, is a low, rectangular light-coloured building, which is prominent from seaward.

Charts 1841, 676, 2158a, 2158b, 449.

Chart 3902.

Secche di Macchia Tonda, with depths of from 4 to 5 fathoms (7^m3. to 9^m1) over them, lie between 2 and 3 miles southward of Santa Severa and about 1½ miles offshore; there are depths of from 6 to 8 fathoms (11^m0 to 14^m6) between these shoals and the coastal 5 bank.

Torre Flavia, a light-coloured square tower on a sloping base, stands on the coast about 5½ miles south-eastward of Santa Severa. The village of Cerveteri, which is situated at an elevation of 266 feet (81^m1), about 3¼ miles north-eastward of Torre Flavia, is plainly visible from 10 seaward; an old grey castle with a tower is prominent at the south-eastern end of the village.

Secche di Flavia, with depths of less than 5 fathoms (9^m1) over them, extend about 2 miles south-south-westward of Torre Flavia; a 2½-fathom (5^m0) rocky patch lies about 1¼ miles south-south- 15 westward of the tower.

The village of Ladispoli lies stretched along the beach about 1½ miles south-eastward of Torre Flavia; a white, square belfry rises from amongst the houses in the north-western part of the village.

The village of Palo lies about 1½ miles south-eastward of Ladispoli, 20 and has two prominent buildings at its eastern end; the western of these is a large and well-preserved castle with circular turrets, and the eastern building is a modern house with many windows. There are some ancient submerged ruins off the beach fronting the village and a row of masonry blocks is placed there to prevent further coastal 25 erosion.

There is anchorage in depths of about 5½ fathoms (10^m1), with the castle, bearing 015°, about half a mile offshore. Landings can be effected on the beach, either north-westward of the castle, or south-eastward of the modern building, but landing is impracticable on the 30 beach between them.

Secche di Palo, with depths of less than 5 fathoms (9^m1) over them, is in two parts; the northern part extends about 1½ miles south-westward from Palo castle, and the southern part extends a similar distance south-westward from a position on the coast about one mile 35 south-eastward of Palo castle. There are depths of from 6½ to 8 fathoms (11^m9 to 14^m6) between the two parts.

Between Palo and Fiumicino, about 11 miles south-south-eastward, the coast is backed by low, undulating hills gradually decreasing in elevation southward. Torre Palidoro, light-coloured, square, and in 40 good preservation, is situated close within the coast, about 2 miles south-eastward of Palo; it is readily identified by a low and light-coloured farmhouse close south-eastward of it. Torre Maccarese (*Lat.* 41° 52' N., *Long.* 12° 12' E.), grey, square and shorter than Torre Palidoro, stands about 3½ miles south-south-eastward of that tower 45 at the northern edge of a dense pine wood which backs the coast for about 2 miles south-south-eastward.

A long row of bathing sheds with tiled roofs stands on the beach in front of the pine wood about one mile south-south-eastward of Torre Maccarese, and about 2½ miles farther southward is Fogene, a hamlet 50 consisting of a group of houses and easily identified as the only group of buildings on the coast between Palo and Fiumicino. From Fogene, the coast trends southward for about 2½ miles to Fiumicino and is low with occasional trees.

Charts 1841, 676, 2158a, 2158b, 449.

Chart 1841, plan of Fiumicino.

Canale di Fiumicino.—General remarks.—The entrance to Canale di Fiumicino is situated about 2 miles northward of the mouth of Fiume Tevere, with which it is connected about $2\frac{1}{2}$ miles above the entrance, thus forming its northern mouth. The town of Fiumicino, which in 1947 had a population of 5,788, is situated on the northern bank of the canal, about a quarter of a mile within the entrance. The canal enters the sea between two concrete moles, each of which extends about three-quarters of a cable seaward. Porto-Canale, which comprises the outer reach of Canale di Fiumicino, lies between the entrance and an iron lifting bridge about three-quarters of a mile eastward. The delta of Fiume Tevere extends seaward from 10 to 13 feet (3^m0 to 4^m0) every year.

The locality may be identified by the following landmarks: A large yellow hotel, situated on the canal bank at the western end of the town, about 2 cables within the entrance; the pilot's lookout station, a yellowish-brown tower, 43 feet (13^m1) in height, situated about three-quarters of a cable westward of the hotel; a conspicuous concrete water tank, on pillars, situated about $3\frac{3}{4}$ cables south-eastward of the canal entrance; and, in the background, Monte Cavo (page 352) crowned by a large building. See view facing this page.

Prohibited anchorage.—Submarine telegraph cables are laid in an area extending from the coast about $2\frac{1}{4}$ miles northward, and $9\frac{1}{2}$ miles south-eastward, of the canal entrance; the northern and southern limits of the area are indicated by pecked lines on chart 3903. Anchorage eastward of the 20-fathom (36^m6) line is prohibited between these limits.

Pilotage.—Entrance signals.—Pilotage is compulsory for vessels of over 19 tons, both in the canal and in Fiume Tevere; there are separate pilotage authorities for the canal and river.

The following signals are displayed from the flagstaff at the pilot's lookout station:

The pilot flag . . . Entrance is permitted.

A red flag . . . Entrance is prohibited.

Porto-Canale.—Lights.—Depths.—The entrance between the two moles is 100 feet (30^m5) wide and this width is maintained as far as the iron lifting bridge across the canal, except for an area abreast the town where it widens out to 213 feet (64^m9) over a length of about three-quarters of a cable. The Darsena, a basin almost square, with sides about 160 yards (146^m3) long, is situated abreast the town on the southern side of the widened area; about half a cable eastward of the Darsena, a branch of the canal leads south-eastward from the southern side of Porto-Canale and is crossed by a swing bridge at its entrance. Both sides of Porto-Canale and the southern and eastern sides of the Darsena, are lined with quays.

A light is exhibited, at an elevation of 28 feet (8^m5), from a red iron framework structure, 20 feet (6^m1) in height, situated on the head of the northern mole.

A light is exhibited, at an elevation of 28 feet (8^m5), from a black iron framework structure, 20 feet (6^m1) in height, situated on the head of the southern mole.

A light is exhibited, at an elevation of 34 feet (10^m4), from a grey iron framework structure, 26 feet (7^m9) in height, situated on the root of the southern mole (Lat. $41^{\circ} 46' N.$, Long. $12^{\circ} 13' E.$).

Charts 3902, 3903, 1841, 676, 1440, 2158a, 2158b, 449.

Torre di Capo d'Uomo. Torre Molinaccio. Torre Talamone.



Capo d'Uomo.

Talamone lighthouse,
bearing 348°, distant 9 cables.
Capo d'Uomo from south-eastward.
(Original dated prior to 1947.)

Colle della Rocca.

Monte Argentario.

Forte S. Filippo. Molinaccio.



Porto Ercole.

Grotte.

Forte S. Caterina

Forte La Rocca light-tower,
bearing 281°, distant 13 miles.

Porto Ercole from eastward.

(Original dated prior to 1947.)

Dome of St. Peter's.



White tower.

Water tower.

Fiumicino
Canal entrance.

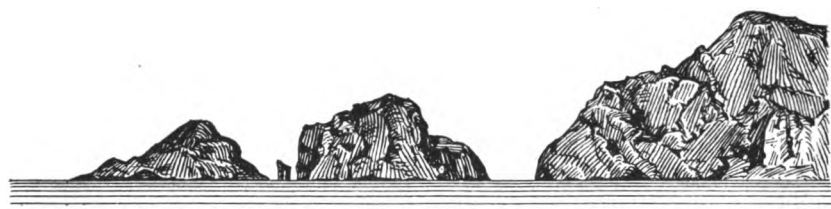
Fiumicino from westward.

(Original dated 1938.)

Fiumara Grande lighthouse
(destroyed 1944).



Monte Circeo from about 10 miles north-westward.
(Original dated prior to 1947.)



Southern end of Isola di Palmarola from eastward.
(Original dated 1921.)

Chart 1841, plan of Fiumicino.

The depths in Porto-Canale vary according to the condition of Fiume Tevere. Dredging operations are always in progress on account of continuous silting; an average depth of 10 feet (3^m0) is maintained in the canal and of 7 feet (2^m1) in the Darsena. 5

Caution.—The moles, quays and swing bridge all suffered extensive war damage, and in 1947 were under repair. At that date there were numerous wrecks in the entrance and in Porto-Canale, and the swing bridge was being replaced by a lifting bridge; there were depths of 10 feet (3^m0) on the bar and a channel about 66 feet (20^m1) wide had been dredged to a similar depth between the wrecks in the canal. 10

Traffic signals.—Vessels wishing to have the iron bridge across the canal lifted should sound *three* blasts on the whistle; the passage between the central pillar of this bridge and the northern bank of the canal, is 49 feet (14^m9) wide. 15

Vessels wishing to proceed along the southern branch of the canal, should sound *two* blasts on the whistle to request the bridge on the southern bank of the canal to be opened.

Current.—The current in the Porto-Canale is variable and its greatest rate is from 6 to 7 knots. Issuing from the canal entrance, the current almost invariably gradually turns north-north-westward and runs parallel with the coast. 20

As considerable overfalls are caused by the out-going current from both mouths of Fiume Tevere, caution is necessary in boats, especially during onshore winds. 25

Port facilities.—Moderate quantities of coal and small quantities of fuel oil and petrol are normally stocked.

Small quantities of fresh provisions are available. Fresh water is normally available at two quays on the southern side of the canal.

Minor repairs to small craft can be undertaken. There are three slipways, the largest of which can take vessels up to 148 feet (45^m1) in length. 30

Two medium-sized tugs and several lighters are normally available and there are two 1½-ton mobile cranes on the quays on the northern side of Porto-Canale (*Lat.* 41° 46' N., *Long.* 12° 13' E.). 35

In 1947, it was reported that, owing to war damage, no tugs or lighters were available, and that fresh water could be obtained only from fountains in the town.

There is regular sea communication with Sardinia and with other Italian ports. 40

Charts 3902 and 3903.

Navigation of Fiume Tevere.—There is considerable traffic of small craft between Canale di Fiumicino and the port of Rome, situated in the southern part of the city about 18 miles north-eastward. Navigation in Fiume Tevere is not easy owing to its tortuous course and to the variations of depths consequent on floods and low levels of the river, which often follow one another in quick succession. The least depth in the channel at low level of the river is about 5 feet (1^m5). 45

The Captain of the Port of Rome is the authority for river navigation and has river pilots under him at his headquarters in Rome. Pilotage in the river is compulsory for commercial vessels of 15 tons and over, and for pleasure craft of 10 tons and over, and no vessel may proceed up the river from Canale di Fiumicino until acquainted with the River Regulations. 50

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Charts 3902 and 3903.

Fiumara Grande.—Fiumara Grande is the name given to the southern branch of Fiume Tevere between the eastern end of Canale di Fiumicino and the sea. Its mouth lies about 2 miles south-south-eastward of the entrance to Canale di Fiumicino, and between them is Isola Sacra, a low flat area, partly cultivated and with no distinctive features.

The entrance to Fiumara Grande is only practicable for boats as it is encumbered with sandbanks and usually has depths of not more than one fathom (1^m8). Torre San Michele (*Lat.* 41° 44' N., *Long.* 12° 15' E.), a massive reddish octagonal building, surmounted by a small tower, stands on the southern bank about one mile within the entrance, and is prominent.

Currents.—Great caution is necessary, especially during fresh north-easterly winds, when proceeding along the coast in the vicinity of Fiumara Grande, owing to the nature of the coast, the shoals off the mouth of Fiumara Grande, and the various and irregular currents.

As a general rule, the current setting out of Fiumara Grande gradually turns north-north-westward, as is the case off the mouth of Canale di Fiumicino.

Should southerly winds be established and blowing at all fresh, the dividing line between the yellowish current and the blue sea-water to windward is distinct and is easily visible.

Approaching from south-westward, blue water will be again reached almost directly the vessel has passed beyond the mouth of Fiumara Grande. It has been observed that, when close inshore in this vicinity the current occasionally sets quite appreciably onshore.

Chart 3903.

Lido di Roma.—Lights.—The town of Lido di Roma, which in 1947 had a population of 7,395, lies stretched out along the beach between the mouth of Fiumara Grande and the entrance to Canale di Castel Fusano, about 3½ miles east-south-eastward. It is a popular seaside resort and contains many modern villas and hotels surrounded by gardens; a large masonry bathing establishment is prominent on the beach, and in the centre of the town the grey cupola of the parochial church may be distinguished from several miles seaward. Canale di Castel Fusano enters the sea between two short moles, situated at the south-eastern end of the town.

A light is exhibited, at an elevation of 28 feet (8^m5), from a concrete column, 21 feet (6^m4) in height, situated on the head of each of the moles at the entrance to Canale di Castel Fusano.

Submarine cables.—Prohibited anchorage.—Submarine telegraph cables are landed close to the entrance to Canale di Castel Fusano, *see* page 17.

Coast.—Aspect and landmarks.—From the mouth of Fiumara Grande to Capo d'Anzio, about 25 miles south-eastward, the coast consists of a light-coloured sandy beach. For about the first 12 miles of this stretch the beach is backed by dense pine woods, southward of which is cultivated land with scattered groups of trees. About 14 miles inland and 21 miles eastward of the mouth of Fiumara Grande, are Monti Albani, the westernmost peak of which, Monte Cavo, 3,114 feet (949^m1) high, is crowned by a large hotel, formerly a convent. In clear weather, the villages of Albano Laziale and Velletri, situated

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3903.

respectively, at elevations of 1,227 feet (374^m0) and 1,155 feet (352^m0), about $3\frac{1}{2}$ miles west-south-westward, and $4\frac{1}{2}$ miles south-eastward, of Monte Cavo, will be seen.

About $4\frac{1}{2}$ miles east-north-eastward of the mouth of Canale di Castel Fusano, and $3\frac{1}{2}$ miles inland, is Castel Porziano, the white square tower of which rises from a group of houses with red roofs, and stands out prominently from the surrounding trees. Palazzina Borghese, a low, reddish-coloured building with a square crenellated tower, stands on the coast about 7 miles south-eastward of the mouth of Canale di Castel Fusano.

About $2\frac{1}{2}$ miles east-north-eastward of Palazzina Borghese, the village of Pratica di Mare stands at an elevation of 292 feet (89^m0), on a long level ridge; among the houses of the village is a large light-coloured building, the upper part of which has been destroyed, which is the remains of Torre Pratica di Mare, and which is completely hidden by trees from westward.

The most prominent landmark in the vicinity is Torre Maggiore (*Lat.* 41° 41' N., *Long.* 12° 35' E.), which stands at an elevation of 400 feet (121^m9) about $4\frac{1}{2}$ miles east-north-eastward of Torre Pratica di Mare; it is dark in colour and is clearly visible from some distance seaward.

Torre San Lorenzo, square, crenellated and 30 feet (9^m1) in height, stands on the coast about $7\frac{1}{2}$ miles south-south-eastward of Torre Pratica di Mare. Torre San Anastasio, tall, dark and square, stands among trees at an elevation of 151 feet (46^m0) about $2\frac{1}{2}$ miles south-eastward of Torre San Lorenzo and half a mile inland. Torre Caldara, squat, circular and light-coloured, stands at an elevation of 46 feet (14^m0) on the cliffs which stretch unbroken between it and Capo d'Anzio; the submerged ruins of an ancient Roman villa extend about half a cable offshore abreast Torre Caldara.

From Torre Caldara, the coast trends south-eastward for about $2\frac{1}{2}$ miles to Capo d'Anzio; about midway along this stretch is a prominent slender chimney, 164 feet (50^m0) in height.

Chart 1841, plan of Porto d'Anzio.

Capo d'Anzio. — Light. — Signal station. — Danger. — Capo d'Anzio is a steep headland of porous rock, about 75 feet (22^m9) high; there are numerous grottoes in its steep face and it terminates in a distinctive arch which is clearly visible from southward.

A light is exhibited, at an elevation of 121 feet (36^m9), from a circular tower on a dwelling, painted in red and white horizontal bands, 69 feet (21^m0) in height, situated about 2 cables south-eastward of the extremity of Capo d'Anzio.

A signal station, painted in black and white chequers, with a flagstaff close to it, is situated about $1\frac{1}{4}$ cables north-north-eastward of the extremity of the cape.

A bank on which the depths are less than 5 fathoms (9^m1) fronts Capo d'Anzio and the coast for about half a mile east-south-eastward, and extends as much as three-quarters of a mile offshore; the ruins of the ancient Porto di Nerone, some of which are above water, lie on the inner part of this bank, between a quarter and half a mile east-south-eastward of Capo d'Anzio and about 2 cables offshore. A group of rocks, sunken and awash, the outermost of which is named Sconiglio, lies about a quarter of a mile east-south-eastward of the ruins.

Charts 3903, 1841, 676, 1440, 2158a, 2158b, 449.

Chart 1841, plan of Porto d'Anzio.

Telegraph cables.—Submarine telegraph cables are landed at a cable station situated about 3 cables northward of Capo d'Anzio. Anchorage is prohibited in the vicinity of these cables.

- 5 **PORTO D'ANZIO.—General remarks.**—From Capo d'Anzio, the coast trends east-south-eastward for about half a mile and thence sweeps in a wide curve east-north-eastward for about $1\frac{1}{2}$ miles to the town of Nettuno. The town of Anzio, which had a population of about 7,000 in 1947, lies spread along the coast for about the first
10 mile of this stretch; in addition to its commercial traffic and fishing industry, the town is a popular summer resort.

Vessels approaching from northward will identify a grey cupola rising from among the trees of the cemetery, which is situated about half a mile north-north-eastward of Capo d'Anzio and is readily distinguished by a long whitewashed wall in front of it which runs parallel
15 with the coast; the cathedral, a massive building of light-coloured brick, situated about $1\frac{1}{2}$ cables southward of the cemetery, is also prominent; and a tall, dark-red tower, rising from a pine wood about a quarter of a mile eastward of Capo d'Anzio (*Lat.* $41^{\circ} 27' N.$, *Long.*
20 $12^{\circ} 37' E.$), will also be distinguished.

Vessels approaching from south-eastward will identify the town of Nettuno (page 351), situated about $1\frac{1}{2}$ miles east-north-eastward of Anzio, the space between them being covered with pine woods; Villa Borghese, an old, grey rectangular building with a flat roof, situated
25 about midway between Anzio and Nettuno; Villa Paradiso, a prominent white building, surmounted by two silver cupolas, situated in the eastern part of Anzio, about half a mile eastward of the cathedral; and Villa Mattoli, with a red roof surmounted by a cupola, about a quarter of a mile eastward of the cathedral.

- 30 **Harbour.—Quayage.—Light.**—The harbour of Porto d'Anzio lies eastward of the town and is protected from westward and southward by Molo Neroniano, which extends about $1\frac{1}{2}$ cables south-south-eastward from a position about $5\frac{1}{2}$ cables eastward of Capo d'Anzio, and Molo Innocenziano, which extends about $2\frac{1}{2}$ cables eastward from
35 the head of Molo Neroniano.

There are a number of dwellings on Molo Neroniano and on the inner part of Molo Innocenziano, and the whole of the eastern side of the former, and the inner part of the northern side of the latter, are faced with quays.

- 40 A concrete jetty extends about three-quarters of a cable south-eastward from the coast about $2\frac{1}{2}$ cables north-eastward of the root of Molo Neroniano, and from the head of this jetty a mole projects a similar distance south-westward, parallel with the coast, forming Porticciolo Pamphili, a boat basin which is subject to heavy silting.

- 45 A light is exhibited, at an elevation of 33 feet (10^m1), from a red column on a circular concrete hut, 21 feet (6^m4) in height, situated on the head of Molo Innocenziano.

A shoal bank extends southward from the coast and fills all the innermost part of the harbour. Constant dredging is necessary and
50 depths of from $2\frac{3}{4}$ to $3\frac{1}{4}$ fathoms (5^m0 to 5^m9) are normally maintained in the approach channel and in an area about half a cable wide, about 22 yards (20^m1) off the face of the northern side of Molo Innocenziano and the outer part of Molo Neroniano, but the depths in the harbour

Charts 3903, 1841, 676, 1440, 2158a, 2158b, 449.

Chart 1841, plan of Porto d'Anzio.

are very variable. The quay near the root of Molo Neroniano has depths alongside of about 10 feet (3^m0) and is reserved for lighters.

The harbour is open eastward and is subject to considerable sea with winds from north-east through east to south, but it affords good shelter during south-westerly winds. 5

Caution.—The town and harbour of Porto d'Anzio suffered extensive war damage; in 1947, conditions were reported as follows:—There were still several wrecks in the approaches to Porto d'Anzio and in Porticciolo Pamphili, but the harbour itself was clear of wrecks. 10 Considerable silting had taken place in the harbour, especially in the dredged area near the entrance, where there was a maximum depth of 15½ feet (4^m8). The sea bed alongside the quays was foul, necessitating great caution in approaching them and the inner part of Molo Neroniano was still under repair. All equipment for working cargo 15 on the quays was out of action and all fresh water pipes on the quays were destroyed.

Pilotage.—Pilotage is compulsory for vessels of over 50 tons displacement.

Anchorage.—Directions.—In fair and settled weather, temporary 20 anchorage may be obtained in depths of about 5 fathoms (9^m1), sand, about half a mile south-eastward of the head of Molo Innocenziano, with the light-structure on the mole head bearing 318° and in line with the cathedral.

In order to avoid the ruins of Porto di Nerone, Sconcioglio and the 25 adjoining rocks, vessels approaching from westward or south-westward should not shape course for the harbour until Villa Borghese and the light-structure on the head of Molo Innocenziano (*Lat.* 41° 27' N., *Long.* 12° 38' E.) are in line, bearing about 019°; at night, vessels should keep this light bearing less than 023°. 30

Owing to the continual variations in depths at the entrance, vessels must adhere strictly to the instructions given from time to time by the Port Authorities, and should await information before entering. Except in cases of great emergency, entry should not be attempted at night. 35

Port facilities.—Small quantities of fuel oil and petrol are normally stocked; the former is supplied in casks and the latter in cans.

Moderate supplies of fresh provisions can be obtained.

Minor repairs to small craft can be undertaken. There is a slipway, situated about half a cable north-eastward of the root of Molo Neroniano; it is about 200 feet (61^m0) in length with a maximum lifting capacity of 500 tons. 40

Fresh water is normally available alongside Molo Neroniano and there is normally a 5-ton hand crane near the head of this mole but, as stated previously, in 1947 all fresh water pipes on the quays were 45 destroyed and all equipment for working cargo was out of action.

Current.—In the vicinity of Porto d'Anzio, the current usually sets north-westward, parallel with the coast; it is normally weak but is accentuated by south-easterly winds.

With south-easterly winds, the water is driven into the harbour 50 and causes a strong eastward-going current along the face of Molo Innocenziano.

Nettuno.—The town of Nettuno, which in 1947 had a population of about 12,000, is situated about one mile east-north-eastward of Porto

Charts 3903, 1841, 676, 1440, 2158a, 2158b, 449.

Chart 1841, plan of Porto d'Anzio.

d'Anzio; it is prominent from seaward owing to its closely grouped buildings, the crenellated wall which encloses a large part of its south-eastern part, and a large, solidly-built castle with heavy towers at the corners, situated in front of the centre of the town.

Close eastward of the castle is the parochial church with a high façade and grey belfry. San Rocco church, a large brick building with a square belfry, stands in an isolated position about half a mile eastward of the castle and a short distance farther eastward is a large white building with a red roof.

There are depths of 8 fathoms (5^m5), sand, about 3 cables offshore and of 5 fathoms (9^m1) about one mile offshore, abreast Nettuno. Small vessels wishing to communicate with the town might obtain anchorage in depths of about 15 feet (4^m6), southward of the parochial church, about 2½ cables offshore.

*Chart 3903.***COAST.—Capo d'Anzio to Capo Circeo.—Anchorage.—**

Between Capo d'Anzio and Capo Circeo, about 23½ miles south-eastward, the coast is low, sandy and uniform. A chain of narrow lakes lies close within the south-eastern part of this stretch of coast.

Torre Astura, about 7 miles east-south-eastward of Capo d'Anzio, is a prominent dark-grey tower built on a rock in front of a low projecting point with which it is connected by a stone bridge with several arches. A rocky reef, on which there are extensive ruins, awash in places, extends about 1½ cables southward and south-eastward of Torre Astura. A villa stands on the coast close northward of the tower, and Fiume Astura (Asturia) flows into the sea about 6½ cables north-eastward of it.

Torre di Foce Verde is a square brick tower, situated on the coast about 2 miles eastward of Torre Astura and between them is the village of Valli Montori in which two low, square brick houses are prominent. On a plain about 5 miles north-eastward of Torre di Foce Verde is the town of Latina, in which a tall light-coloured square belfry with a tower a short distance below it, may be distinguished.

Small vessels may obtain anchorage, in depths of about 3½ fathoms (6^m4), with Torre di Foce Verde in line with Monte Cavo (page 346) bearing 345°, and Torre Astura (*Lat.* 41° 24' N., *Long.* 12° 46' E.) bearing 273°. Small boats with local knowledge can effect landings on the eastern or western side of Torre Astura, according to the direction of the sea, making use of passages in the reef surrounding the tower.

Lago di Fogliano and the smaller Lago di Monaci and Lago di Caprolace, farther south-eastward, are all connected by a canal named Fossa Papale. Lago di Fogliano has a narrow outlet to the sea close northward of the ruins of Torre di Fogliano, about 5 miles east-south-eastward of Torre di Foce Verde. Close south-eastward of this outlet and a short distance inland is a tall white silo, which stands out against the thick woods behind it; on the beach are usually many large heaps of charcoal and timber, which during the summer are loaded into small local craft. These craft anchor off Torre di Fogliano according to their draught; there are depths of about 5 fathoms (9^m1), sand, about half a mile offshore, and of 3 fathoms (5^m5), sand, about a quarter of a mile offshore.

Charts 3902, 3903, 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3903.

Lago di Sabaudia (Paola), long, narrow and with a maximum depth of 6 fathoms (11^m0), is separated from the sea by a relatively high strip of land, narrow and wooded. The town of Sabaudia is situated close eastward of the northern end of the lake and may be identified by a slender, white square belfry with a white square tower near it, both rising from among light-coloured modern buildings which stand out against the dark forest behind the town. 5

At the southern end of Lago di Sabaudia is an outlet formed by an old Roman canal which enters the sea between stone embankments close to Torre Paola, about 1½ miles north-north-westward of Capo Circeo and at the foot of the rocky slopes of Monte Circeo. In calm weather, a small boat can enter this canal, taking care to avoid the rocks, awash, at its mouth. 10

Torre Paola is a massive, greyish, circular tower, which from a distance does not show up well against the rocky slopes behind it. See view facing page 347. 15

Chart 3904.

GOLFO DI GAETA.—General remarks.—Golfo di Gaeta is entered between Capo Circeo and Punta di Fumo with the islands off it, about 45 miles south-eastward. The shores of the gulf are generally low and flat, except near Terracina, Gaeta and Mondragone, situated about 10 miles east-north-eastward, about 24 miles eastward, and about 36 miles eastward, respectively, of Capo Circeo. Several rivers flow into the gulf, the principal ones being Fiume Garigliano which enters the sea about 8 miles eastward of Gaeta, and Fiume Volturno, with its mouth about 6 miles south-eastward of Mondragone. The depths in the gulf are great and its shores may be safely approached to a distance of about one mile. 20 25

Promontorio Circeo. — Danger. — Light. — Signal station. — Promontorio or Monte Circeo, of which Capo Circeo is the south-western extremity, is an isolated and rocky mass, which rises steeply and is covered with sparse vegetation. The promontory is connected with the mainland by low flat land and when seen from north-north-westward, it appears as a high, conical and pointed island; viewed from south-eastward, it appears as a long, undulating ridge. On its principal summit, at an elevation of 1,775 feet (541^m0), are some inconspicuous ruins and a beacon, and about half-way up its eastern side is the village of San Felice which in 1947 had a population of about 2,500. Torre del Fico, tall, circular and painted in black and white chequers, stands on the coast on the eastern side of the promontory about 2 miles eastward of Capo Circeo, and is prominent. Torre Vittoria and Torre Olivola, both square and with windows, stand on the coast about one mile and 2 miles, respectively, north-north-eastward of Torre del Fico; behind Torre Vittoria are two prominent villas. Between Torre del Fico and Torre Olivola, the beach is wide and sandy. 30 35 40 45

A rocky bank, with depths of from one to 2½ fathoms (1^m8 to 4^m6) on it, extends about three-quarters of a mile offshore between Torre del Fico and Torre Vittoria (*Lat.* 41° 14' N., *Long.* 13° 06' E.). 50

A light is exhibited, at an elevation of 125 feet (38^m1), from a white circular tower on an octagonal base, attached to a white two-storeyed

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

dwelling, 59 feet (18^m0) in height, situated at Batteria Cervia, about one mile eastward of Capo Circeo.



A signal station stands at an elevation of 1,444 feet (440^m1) on Punta Cristoforo, a peak about 4 cables northward of the light-structure.

Submarine cable.—A submarine telegraph cable is landed close eastward of Torre del Fico. Anchoring and fishing are prohibited within a distance of about 1½ cables on either side of a line drawn in a 167° direction for 2 miles from that tower. See page 17.

Anchorage.—There is anchorage off the eastern side of Promontorio Circeo, in depths of about 7 fathoms (12^m8), with Torre del Fico bearing 245°, distant 2 miles. Small vessels anchor closer inshore in depths of 3½ fathoms (6^m9), east-north-eastward of Torre Vittoria (*Lat.* 41° 14' N., *Long.* 13° 06' E.).

Coast.—Between Torre Olivola and the entrance to Porto-Canale di Badino, about 4 miles east-north-eastward, the coast is very low and even in clear weather is not visible from more than about 3 miles offshore. The entrance to the Porto-Canale can be identified from seaward by Torre Badino which has a house attached to it, situated close to the western entrance point of the canal; by the belfry of a church; and by the two metal pylons of a radio station which rise close within it. Torre Badino is surmounted by a masonry structure from which a light was formerly exhibited.

Porto-Canale di Badino.—**Quayage.**—**Caution.**—Porto-Canale di Badino is a small harbour, formed by the mouth of Fiume Grosso which enters the sea between two concrete jetties extending from embankments. There are depths of from 4 to 9 feet (1^m2 to 2^m7) on a bar across the entrance, and vessels which can cross the bar can ascend the river as far as Ponte Maggiore, about 3 miles above the entrance. The canal is from 50 to 80 feet (15^m2 to 24^m4) wide, with depths in it of from 13 to 16 feet (4^m0 to 4^m9). With strong southerly winds, the Porto-Canale is inaccessible and the depths at the entrance are liable to alter. The current has a normal rate of from one to 2 knots and this rate increases after rainy periods. About 1½ cables above the entrance is a swing bridge on stone pillars with an opening about 66 feet (20^m1) wide. During offshore winds, there is anchorage off the entrance on a sandy bottom.

Both sides of the Porto-Canale are lined with quays which can normally accommodate about 10 small craft of between 70 and 80 tons, below, and about 30 similar craft above, the swing bridge.

The moles and quays of Porto-Canale di Badino suffered extensive war damage, and in 1949 it was reported that, although the entrance was clear, there were numerous wrecks in the Porto-Canale and a large part of the quays and moles was under repair.

Terracina.—The town of Terracina, which in 1947 had a population of about 20,100, stands close within the coast on the north-eastern side of a canal which enters the sea about 2½ miles eastward of Torre Badino. The town consists of the old city, built on the southern slopes of a rocky hill and dominated by two prominent towers, and the new town, built on a plain at the foot of the hill and containing several modern and prominent buildings. On the hill above the town are the isolated ruins of an ancient temple with numerous arches

Chart 3904.

which are visible from eastward and southward ; immediately below these ruins is Pesco Montano (*Lat.* $41^{\circ} 17' N.$, *Long.* $13^{\circ} 16' E.$), a remarkable rocky monolith, and an extensive group of buildings with a façade having four pillars and three arches. On the ancient break- 5
water of Porto Traiano, situated west-north-westward of the present sea wall, is a red building named La Batteria, and numerous villas and modern houses extend along the coast.

Harbour. — Lights. — Quayage. — Caution. — The harbour consists of an outer port, protected by a quayed mole and by a sea 10
wall, and the Porto-Canale di Terracina, the entrance to which lies close to the root of the sea wall. Both sides of the Porto-Canale are faced with stone quays and a depth of about 9 feet (2^m7) is normally maintained there by constant dredging. A small basin lies on the southern side of the Porto-Canale, about $1\frac{1}{4}$ cables within the entrance, 15
and a stone bridge crosses the canal about a quarter of a mile above the entrance.

A light is exhibited, at an elevation of 28 feet (8^m5), from a red iron structure on a square stone hut, 15 feet (4^m6) in height, situated on the head of the mole. 20

A light is exhibited, at an elevation of 20 feet (6^m1), from a red iron structure, 15 feet (4^m6) in height, situated on the southern side of the canal entrance.

Both the outer mole and the quays in the Porto-Canale suffered extensive war damage. In 1949, the state of the port was reported as 25
follows :—Reconstruction work was in progress on the outer mole. In the Porto-Canale, about 754 feet (229^m8) of quayage on the south-western side and 600 feet (182^m9) of quayage on the north-eastern side, had been rebuilt. There were depths of 16 feet (4^m9) in the outer port and of 11 feet (3^m4) in the entrance and in the fairway of the Porto- 30
Canale ; alongside the rebuilt quays, there were depths of about $7\frac{1}{2}$ feet (2^m3), but at that date, dredging was in progress to increase the depths alongside to 10 feet (3^m0).

Anchorage.—Small vessels anchor, in depths of $2\frac{3}{4}$ fathoms (5^m0), eastward of the molehead. Auxiliary motor fishing craft usually 35
anchor, in depths of from $4\frac{1}{2}$ to $5\frac{1}{2}$ fathoms (8^m2 to 10^m1), south-south-eastward of the head of the sea wall. The bottom is sand and good holding ground. Vessels of moderate size usually anchor in depths of about 8 fathoms (14^m6).

Port facilities.—Fishing is carried out on a large scale at Terracina 40
and is the principal industry of the town. There is a civil hospital of moderate size in the town.

Small quantities of coal and of motor spirit are normally maintained ; the latter can usually be embarked from a tank on the mole.

Moderate quantities of fresh provisions and fresh water are normally 45
available.

Minor repairs to small craft can be undertaken ; there are two small patent slips situated in the basin on the southern side of the Porto-Canale.

Coast.—Anchorage.—From the entrance to Porto-Canale di 50
Terracina, the coast trends north-eastward for about $1\frac{1}{4}$ miles and is high and rocky, whence a sandy beach extends east-south-eastward for about $7\frac{1}{2}$ miles and terminates at a rocky promontory on which is the village of Sperlonga. About $1\frac{1}{2}$ miles within the north-western part of

Charts 3902, 1841, 158, 676, 2158a, 2158b, 449.

Chart 3904.

this beach is Lago di Fondi, a lake from which two streams discharge into the sea; the western stream enters the sea between two moles about $1\frac{1}{2}$ miles north-eastward of Terracina, and the mouth of the eastern stream is situated about $2\frac{1}{2}$ miles farther east-south-eastward. Both of these streams are navigable by boats.

About $1\frac{1}{2}$ miles west-north-westward of Sperlonga is Lago Lungo, which communicates with the sea by a canal, with two stone jetties, one of which is about three-quarters of a cable long, extending from its mouth; the canal is 33 feet (10^m1) wide, 3 feet (0^m8) deep, and is about three-quarters of a cable in length.

The promontory containing Sperlonga decreases in elevation towards its extremity, on which stands Torre Truglia (*Lat.* 41° 15' N., *Long.* 13° 26' E.), square, with stone plinths at the corners and surmounted by a light-coloured structure. The promontory is fringed with rocks and should be given a berth of at least $2\frac{1}{2}$ cables.

Small vessels anchor, in depths of $2\frac{1}{2}$ fathoms (5^m0), south-westward of Sperlonga, but it is dangerous to remain at this anchorage with winds between south-east and south-west. The depths decrease rapidly and there are depths of one fathom (1^m8) about half a cable offshore; the adjacent beach is low and flat.

Between Torre Truglia and Torre Capovento, situated about $1\frac{1}{2}$ miles south-eastward at the foot of some hills, the coast consists of a sandy beach broken about midway by a rocky point. On the dark green slope of a hill eastward of Sperlonga is a remarkable rocky cliff, surmounted by some inconspicuous ancient ruins and there are two groups of white houses on the beach close eastward of the cliff.

Torre Capovento, white, round and prominent, stands on the edge of a rocky cliff. Torre Sant' Agostino, standing on the coast about 2 miles east-south-eastward of Torre Capovento, consists of an old, circular and partly ruined building, with more ruins at its back and a small house close to it. Torre Scessura, about $1\frac{1}{2}$ miles east-south-eastward of Torre Sant' Agostino, is cylindrical and stands by itself on the spur of a rocky hill; Torre Viola, about half a mile farther east-south-eastward, consists of two buildings, one of which is cylindrical with heavy cornices while the other is square and lower.

Small local craft anchor eastward of Torre Sant' Agostino, where they frequently shelter from strong north-easterly squalls.

Chart 1841, plan of Rada di Gaeta.

Promontorio di Monte Orlando is a rocky promontory connected with the mainland westward of it by a low isthmus; on its summit, about $1\frac{1}{2}$ miles eastward of Torre Viola and at an elevation of 548 feet (167^m0), stands Torre Orlando, an ancient circular mausoleum which is prominent from seaward. Insenatura di Serapo, a bay on the southern side of the isthmus connecting the promontory with the mainland, is entered between a rocky point about 4 cables south-eastward of Torre Viola, and Punta della Trinità, a high rugged cliff, brownish in colour, with three vertical cliffs in one of which is a chapel, situated about $8\frac{1}{2}$ cables eastward. Scoglio La Nave, an above-water rock lying close off the western entrance point of the bay, is not easy to distinguish, being the same colour as the rocky coast behind it. The head of the bay consists of a sandy beach close within which are numerous villas.

There is anchorage in Insenatura di Serapo on the line joining the two entrance points, in depths of from $5\frac{1}{2}$ to 11 fathoms (10^m1 to 20^m1).

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 1841, plan of Rada di Gaeta.

With north-westerly winds, vessels should anchor close to Scoglio La Nave, and with north-easterly winds close to Punta della Trinità. From the line joining the entrance points, the depths decrease fairly rapidly towards the beach at the head of the bay.

Rada di Gaeta.—Rada di Gaeta is a bight at the north-eastern part of Golfo di Gaeta ; it is entered between Promontorio di Monte Orlando and Promontorio di Scauri or Scarovi, about $4\frac{1}{2}$ miles east-north-eastward. At the south-western end of the roadstead is the town of Gaeta which, in 1947, had a population of about 20,000. The town is divided into two parts, Gaeta-Sant' Erasmo and Gaeta-Porto Salvo.

Gaeta-Sant' Erasmo. — Lights. — Signal station. — Gaeta-Sant' Erasmo is situated on the rocky Promontorio di Monte Orlando, partly on a rocky spur projecting eastward from that eminence and partly on the northern side of the promontory. The following landmarks are prominent in the town : Torre Orlando, described on page 356 ; a large castle which dominates the eastern part of the town, situated about 4 cables eastward of Torre Orlando ; the belfry and cupola of the cathedral, about one cable north-north-eastward of the castle ; and the church of San Francesco, which has a high façade in the Gothic style and is situated on an eminence in the western part of the town, about 3 cables west-north-westward of the cathedral.

A light is exhibited, at an elevation of 244 feet (74^m4), from an iron hut, 10 feet (3^m0) in height, situated on Torre Caterina (*Lat.* $41^\circ 12' N.$, *Long.* $13^\circ 35' E.$), about $5\frac{1}{2}$ cables eastward of Torre Orlando.

A light is exhibited, at an elevation of 67 feet (20^m4), from a cylindrical stone tower, painted in red and white horizontal bands, 21 feet (6^m4) in height, situated on Punta dello Stendardo, the north-eastern extremity of Promontorio di Monte Orlando, about $1\frac{1}{2}$ cables northward of Torre Caterina.

A signal station is situated close southward of Punta della Stendardo ; storm warning signals are displayed, *see* page 11.

Harbours.—Caution.—The harbours suffered extensive war damage and there are numerous wrecks and obstructions. Entry should not be attempted without local knowledge.

Porticciolo Santa Maria is a small harbour entered between Punta dello Stendardo and Punta della Sanità, about one cable westward. The eastern part of this harbour is called Porticciolo di Magnamanica and the western part Porticciolo di Porta. It is exposed northward and has depths of $6\frac{1}{2}$ fathoms (11^m9) in the middle, decreasing rapidly towards the sides which are lined with quays. There are normally depths of 10 feet (3^m0) alongside these quays.

All quays in Porticciolo Santa Maria were destroyed during hostilities. Reconstruction work is in progress, and in 1951 it was reported that about 500 feet (152^m4) of quayage was available for berthing vessels not exceeding 10 feet (3^m0) in draught.

Porto Sant' Antonio, which fronts the western part of Gaeta-Sant' Erasmo, is protected by a mole extending northward and north-north-westward from Punta Sant' Antonio, about half a mile west-north-westward of Punta dello Stendardo. The southern side of the harbour is formed by a quay from the middle of which a concrete pier projects about 230 feet (70^m1) northward, with depths of 26 feet (7^m9) alongside its head and of 20 feet (6^m1) alongside its western side. At the western end of the quay, about $1\frac{1}{2}$ cables westward of Punta Sant' Antonio,

Charts 3904, 1841, 676, 1440, 2158a, 2158b, 449.

Chart 1841, plan of Rada di Gaeta.

another concrete pier projects about 165 feet (50^m3) northward, with depths of about 26 feet (7^m9) alongside its head. An area about 370 yards (338^m3) northward of the head of the second pier has been 5 dredged to a depth of 28 feet (8^m5).

Vessels may obtain anchorage in the dredged area even during strong north-easterly winds as they raise but little sea and that not troublesome; strong south-westerly winds raise a much heavier sea. Molo di Sant' Antonio does not protect the quay from northerly winds.

- 10 A bank on which the depths are less than 2 fathoms (3^m7) fronts the coast westward of the quay, extending as much as one cable offshore in places.

In 1946, it was reported that the quay and both piers were destroyed and that the remains of the piers constituted a danger to vessels entering Porto Sant' Antonio. Molo Sant' Antonio was also destroyed, but the remains of a light-structure on its head, painted in red and white bands, was still visible at that date. In 1951, entry to the harbour was reported to be still impracticable.

- 15 **Anchorage.**—Vessels may obtain anchorage in depths of from 5 to 6½ fathoms (9^m1 to 11^m9) between about 3½ and 6 cables northward of Punta Sant' Antonio. The best anchorage, especially in winter, is in depths of from 6 to 6½ fathoms (11^m0 to 11^m9), black mud and clay, good holding ground, from about 3½ to 5 cables eastward of Punta Mulino, situated about 7 cables north-westward of Punta Sant' Antonio, 25 with an old convent on Monte di Santa Agata, situated about 4 cables north-westward of Punta Mulino (*Lat.* 41° 13' N., *Long.* 13° 34' E.), bearing about 285°.

There are some mooring buoys in the roadstead.

- 30 **Current.**—A south-going current, known locally as Corrente del Pontone, sets along the western shore of Rada di Gaeta during southerly winds; when the wind veers north-westerly, the current changes to north-going.

- 35 **Regulations.**—There are special regulations to be observed when an Italian naval squadron is at Porto di Gaeta; vessels visiting the port should make themselves acquainted with these regulations.

Port facilities.—The chief industry of the port is fishing which is carried out by day and, at certain seasons, by night, using lamps. Fishing with nets is prevalent, but the nets are stationary and do not interfere with navigation.

- 40 There is a naval and military hospital as well as a civil hospital of moderate size.

Small stocks of motor spirit are maintained.

Fairly large quantities of fresh provisions can be obtained; water is normally laid on to the quays but *see* Caution above.

- 45 There is regular sea communication with Isola di Ponza (page 365) and with other Italian ports.

- 50 **Gaeta-Porto Salvo.**—Gaeta-Porto Salvo, the ancient Borgo di Gaeta, extends about one mile northward along the coast from the northern side of the isthmus connecting Promontorio di Orlando with the mainland. Monte Conca rises in regular slopes close northward of the town. The white building of a Capuchin convent, about 1½ cables south-westward of Punta Mulino, may be readily identified. The chief industry of Gaeta-Porto Salvo also is fishing.

Harbour. — Light. — Beacon. — Caution. — The harbour

Charts 3904, 1841, 676, 1440, 2158a, 2158b, 449.

Chart 1841, plan of Rada di Gaeta.

suffered considerable war damage and there are numerous wrecks and obstructions. Entry should not be attempted without local knowledge.

Porto Peschereccio, meaning Fishing harbour, is protected by a mole which extends about half a cable eastward from Punta Mulino and thence turns south-south-eastward parallel with the coast for about $1\frac{1}{2}$ cables; there are numerous landing steps on the inner side of the mole and depths of 10 feet (3^m0) alongside it.

A light is exhibited at an elevation of 25 feet (7^m6) from a small black metal tower, 16 feet (4^m9) in height, situated on the head of the mole.

Secca Colonna, with depths of less than 6 feet (1^m8) over it, extends about 70 yards (64^m0) offshore from the coast southward of Punta Mulino; it is marked by a conical concrete beacon, surmounted by a sphere, situated about one cable south-westward of the mole head; in 1944, this beacon was partially destroyed.

There are some mooring buoys between Porto San Antonio and Porto Peschereccio.

A stone breakwater lies about three-quarters of a cable off the coast between $1\frac{1}{2}$ and 4 cables northward of Punta Mulino, and forms a small boat harbour.

A pier projects about 100 feet (30^m5) eastward from abreast a fish factory on the western side of Porto Peschereccio; there are depths of 7 feet (2^m1) alongside its head.

Pontile Costanzo Ciano, a concrete pier about 400 feet (121^m9) long, projects north-eastward from the coast about 3 cables southward of the head of the mole.

The mole and quays of Porto Peschereccio were destroyed during hostilities.

In 1951, it was reported that the mole had been rebuilt and that work was in progress rebuilding the quay at its root. At that date there were depths of from 3 to 8 feet (0^m9 to 2^m4) alongside the mole and of 11 feet (3^m4) in the middle of Porto Peschereccio.

In 1951, it was reported that Pontile Costanzo Ciano (*Lat.* 41° 13' N., *Long.* 13° 34' E.) was completely destroyed.

Port facilities.—Minor repairs to small craft can normally be undertaken. There is a small slipway suitable only for boats and motor launches.

Fresh water is normally available at the quays in Porto Peschereccio, see caution above.

Coast.—From Punta Mulino, the coast sweeps in a wide curve to Formia, about $2\frac{1}{4}$ miles north-eastward. There are some piers between Punta Mulino and Conca, a hamlet on the coast about one mile northward at the foot of the mountain of that name, and numerous oyster beds lie between one and 3 cables offshore. Conca may be identified by a prominent red building; abreast the village are two piers, at which stone from local quarries is embarked.

Formia. — **Danger.** — **Beacon.** — **Buoy.** — Formia, an industrial town which in 1941 had a population of about 16,000, lies stretched along the old Appian way on either side of Punta di Formia, about $2\frac{1}{4}$ miles north-eastward of Punta Mulino. Prominent landmarks in the vicinity are: Torre di Mola, tall and white, situated near the eastern end of the town, about 4 cables east-north-eastward of Punta

Chart 1841, plan of Rada di Gaeta.

di Formia; the grey cupola of Santa Teresa church, situated in the centre of the town about $1\frac{1}{2}$ cables north-north-westward of Punta di Formia; and a castle with a crenellated tower, painted white, standing 5 by itself on a green hill behind the western part of the town.

Secca La Pila, a rock with a depth of 5 feet (1^m5) over it, and surrounded by depths of from 10 to 13 feet (3^m0 to 4^m0), lies about $3\frac{3}{4}$ cables south-westward of Punta di Formia and about 2 cables offshore. A masonry beacon, painted in red and black horizontal bands, is situated 10 about three-quarters of a cable south-westward of the rock, and a buoy is moored about $1\frac{1}{2}$ cables southward of the beacon. In 1945, it was reported that the beacon was destroyed and that the buoy had been washed away.

Harbour.—Caution.—Piers.—The harbour suffered extensive 15 war damage and there are numerous wrecks and obstructions. Entry should not be attempted without local knowledge.

In 1951, it was reported that the war damage had been repaired and that a mole extended about 900 feet (274^m3) in a south-south-easterly direction from Punta di Formia. A breakwater extends about 328 feet 20 (100^m0) north-north-eastward from the head of the mole. The inner part of the mole is quayed for a distance of 735 feet (224^m0) from the root. There are depths of from 10 to 11 feet (3^m0 to 3^m4) alongside the mole, of 16 feet (4^m9) about 5 yards (4^m6) off its foot, and of about 20 feet (6^m1) in the middle of the harbour. It is proposed to extend 25 the breakwater a further 500 feet (152^m4) north-north-eastward.

Porticciolo di Capo Sele, or La Villa, is a small harbour protected by two rough moles, situated at the south-western end of the town about 4 cables west-south-westward of Punta di Formia. There are depths of about 10 feet (3^m0) in the entrance and the harbour affords secure 30 shelter to small craft, except during strong southerly winds which raise a slight sea in it.

There are five piers projecting from the coast between a quarter of a cable and $2\frac{3}{4}$ cables east-north-eastward of Torre di Mola. They are all used for commercial purposes in connection with brick factories 35 and mills in the town. It is dangerous to lie alongside these piers during strong south-easterly winds.

Close south-westward of Torre di Mola (*Lat.* $41^\circ 15' N.$, *Long.* $13^\circ 37' E.$) is a landing pier protected by a rough breakwater.

A light is exhibited from the end of the breakwater projecting north- 40 north-eastward from the head of the mole. Vessels entering Porto di Formia should give the light a berth of at least half a cable.

Anchorage.—There is anchorage, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), mud and good holding ground, off the town at a convenient distance from Secca La Pila. This anchorage should only be 45 used in fine weather during offshore winds.

Port facilities.—Fresh provisions are plentiful.

Minor repairs to small craft can normally be undertaken. There is a small patent slip, capable only of taking boats.

Chart 3904.

50 **Coast.**—Between Torre di Mola and the mouth of Torrente Foce, about $2\frac{1}{4}$ miles eastward, the coast consists of a sandy beach backed by a wooded plain. The village of Maranola, situated on the coastal range about $1\frac{3}{4}$ miles north-north-eastward of Torre di Mola, shows up as a whitish patch dominated by a slender square tower. Castellon-

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

erato, another village, situated on a summit 1,027 feet (313^m0) high, about 2½ miles eastward of Maranola, has a small square tower and a spire rising from amongst its buildings.

The sandy beach terminates at the mouth of Torrente Foce, whence the rocky coast of Promontorio di Scauri trends eastward for about 1½ miles to Torre Scauri. On the top of the cliffs which bound the promontory are situated: Torre Foce, square and situated close south-eastward of the mouth of Torrente Foce; Torre Giano, cylindrical, situated about 3 cables south-eastward of Torre Foce with its upper part rising above surrounding trees; Torre Fico, its lower part circular and its upper part conical but partly broken away, situated about 6 cables east-south-eastward of Torre Giano; and Torre Scauri, square and situated on Punta Scauri, about three-quarters of a mile east-north-eastward of Torre Fico. In 1946, Torre Foce, Torre Giano and Torre Fico were all reported to be partially destroyed.

Insenatura di Scauri. — Dangers. — Anchorage. — Between Torre Scauri and Torre Argento, about 2 miles east-south-eastward, the coast forms Insenatura di Scauri, the shore of which is a sandy beach. The village of Scauri is situated on the bank of a stream about 3½ cables inland from the head of the inlet; it contains several brick factories whose chimneys serve to identify it. Two wooden piers project about 1½ cables south-eastward from the shore at the head of the inlet, with depths of about 10 feet (3^m0) alongside the heads.

Scogliera dei Faraglioni, a ridge of rocks, awash and sunken, extends about 1½ cables east-south-eastward from the western side of the inlet, and La Carena, another similar ridge, extends about half a cable south-eastward from a position close eastward of the extremity of the eastern of the two piers.

Small vessels may obtain anchorage at the head of Insenatura di Scauri, sheltered from winds between west-north-west and east. In summer, with settled weather, anchorage may be obtained off the beach farther south-eastward, where the bottom is sand and mud, good holding ground.

Torre Argento is circular and stands on a rocky hill which breaks the line of sandy beach abruptly. The village of Minturno (*Lat.* 41° 16' N., *Long.* 13° 45' E.), situated about 1½ miles north-north-eastward of Torre Argento at an elevation of 331 feet (100^m9), contains two large dark factories and a white belfry. On a hill a little northward of the village is a square tower, which, when seen from southward, appears to be part of the village.

Coast.—Anchorage.—Fiume Garigliano flows into Golfo di Gaeta about 1½ miles south-eastward of Torre Argento. Its entrance may be identified by Torre di Punta Fiume, slender, square and with heavy cornices, situated on the south-eastern bank about a quarter of a mile above the mouth. A bar across the entrance, which changes its position during gales and when the river is in flood, only permits entry to vessels of a draught not exceeding 3 feet (0^m9), which can ascend the river for a short distance.

Vessels obliged to anchor off the mouth of Fiume Garigliano should do so about 1½ miles offshore, in depths of from 8 to 9 fathoms (14^m6 to 16^m5), mud; they should be ready to weigh at the first sign of onshore winds. In winter, east-north-easterly winds sometimes blow here with great violence.

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

Between the mouths of Fiume Garigliano and the mouth of Fiume Volturno, about 14 miles south-south-eastward, the coast is generally low and marshy. Torre Limatola, light-coloured and circular, is
 5 situated on the coast about $5\frac{1}{2}$ miles south-eastward of the mouth of Fiume Garigliano, and the town of Mondragone stands amongst trees about $3\frac{1}{2}$ miles farther south-eastward and about half a mile inland; the town is dominated by a tower and by a large white building. On the coast about $1\frac{1}{4}$ miles south-eastward of Torre Limatola is a large
 10 yellowish building which is prominent from seaward.

Between Torre Limatola and the town of Mondragone, a mountain ridge approaches the coast and terminates about one mile north-north-eastward of the town in Rocca di Mondragone, 1,332 feet (407^m0) high and conical, with the prominent ruins of a fort on its sharp
 15 summit.

There is anchorage with good holding ground abreast a factory with a tall chimney, situated on the coast eastward of Mondragone. It is dangerous to remain at this anchorage during south-westerly winds but it is sheltered from north-easterly winds.

20 **Fiume Volturno.—Light.**—Fiume Volturno enters the sea about 9 miles south-south-eastward of Torre Limatola. The mouth of the river is wide but is obstructed by sandbanks; the bar, which has a greatest depth of 3 feet (0^m9), projects considerably seaward and should be given a wide berth. The village of Castelvoturno, situated
 25 on the south-eastern bank about $1\frac{1}{2}$ miles above the mouth, is mostly hidden from seaward by trees, but may be identified by its square church tower. Torre di Castelvoturno, also square, situated about one mile eastward of the river mouth, and about 4 cables inland, is only visible from a short distance, but a group of low, reddish houses,
 30 on the coast about $2\frac{1}{2}$ miles farther south-eastward, can be distinguished from about 10 miles offshore.

A light is exhibited, at an elevation of 33 feet (10^m1), from a white circular tower on a masonry base, 26 feet (7^m9) in height, situated on the southern side of the mouth of Fiume Volturno.

35 **Coast. — Beacon. — Buoys. — Anchorage.** — Between the mouth of Fiume Volturno and Torre Patria (*Lat.* 40° 55' N., *Long.* 14° 01' E.), about $7\frac{1}{2}$ miles south-eastward, and thence to Torre Gaveta, about $6\frac{1}{2}$ miles farther southward, the coast consists of a sandy beach. The northern part of this stretch of coast is backed by a wide plain but
 40 the hills begin to approach the coast southward of Torre Patria. The sandy beach terminates at Torre Gaveta, which is in ruins, and from thence to Punta di Fumo, about $1\frac{1}{2}$ miles southward, the coast is steep and rocky.

A beacon stands on the beach about $3\frac{1}{2}$ miles south-eastward of the
 45 mouth of Fiume Volturno. Four pairs of buoys are moored at intervals on a line joining this beacon and Scoglio San Martino, about $11\frac{1}{2}$ miles south-south-eastward. Vessels are prohibited from securing to these buoys, *see* page 363.

Torre Patria stands at the mouth of a canal forming the outlet of
 50 Lago di Patria, about half a mile north-north-eastward; it is square and beside it is a white house with a crenellated tower, while other houses, one of which is tall and white while another has a tower, are scattered behind it. About 3 miles south-south-eastward of Torre Patria is the northern outlet of Lago di Licola, which enters the

Charts 1728, 3904, 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

sea between masonry embankments which are prominent from seaward.

Chart 3931.

Monte Cuma, 269 feet (82^m0) high and surmounted by ruins, stands close to the coast about 4½ miles southward of Torre Patria and about 1½ miles farther southward is Lago Fusaro. On high ground eastward of the lake is the town hall of Baia, a large yellowish building plainly visible from seaward over the sandy beach separating Lago Fusaro from the sea. 5

The volcanic peaks, which overlook Golfo di Pozzuoli (page 388) from northward, also overlook this part of the coast; the highest summits are Monte Barbaro, 1,079 feet (328^m9) high, situated about 2½ miles eastward, and Monte Corbara (chart 3904), 1,046 feet (318^m2) high, about 1½ miles eastward, of Monte Cuma. On Monte Corbara is a large building which is fairly prominent from seaward. 10

Torre Gaveta or Alta, situated about 2 miles southward of Monte Cuma, is in ruins and cannot be distinguished from seaward, but the steep, rocky and light-coloured promontory on which it stands is prominent. 15

In fine weather, vessels wishing to communicate with the shore can anchor off Torre Gaveta, in depths of about 10 fathoms (18^m3), mud, and good holding ground, about 5½ cables offshore, with a small square column near the ruins of the tower, bearing 104°. Small vessels can anchor about 2½ cables offshore in depths of about 3 fathoms (5^m5), with the column bearing 130°. It is dangerous to remain at this anchorage with onshore winds. 20

Scoglio San Martino.—Danger.—Buoy.—Scoglio San Martino, a flat-topped islet or rock containing a group of white buildings, lies about 9 cables south-south-westward of Torre Gaveta and about one cable offshore. A 1½-fathom (2^m7) rocky patch lies about 4 cables northward of this rock and about 3 cables offshore. A buoy, painted in red and black horizontal bands and surmounted by a staff and globe, is moored close westward of the patch. 30

The town of Monte di Procida, which had a population of 7,349 in 1941, is situated about one mile southward of Torre Gaveta. Its chief industry is the extraction and export of volcanic sand from local quarries. Two piers, with depths alongside them of from 8 to 10 feet (2^m4 to 3^m0), project from the coast abreast the town; the roadstead, which is partially sheltered from westward by Scoglio San Martino, is called Acquamorta or San Martino. 35

Punta di Fumo (*Lat.* 40° 47' N., *Long.* 14° 03' E.) lies about 6½ cables south-eastward of Scoglio San Martino.

Current.—The currents off this part of the coast are influenced both in rate and direction by the wind. Close inshore, there is generally a weak north-west-going stream. 45

Torpedo firing ground.—A torpedo firing ground is established between Scoglio San Martino and the beacon about 3½ miles south-eastward of the mouth of Fiume Volturna (page 362). The firing point is on Scoglio San Martino and the direction of fire is 346°. 50

During torpedo firing exercises, a red flag is displayed from a building on Scoglio San Martino. The firing of each torpedo is signalled by a *long* blast on the syren, between one and 2 minutes before firing, and a *short* blast at the moment of firing.

Charts 3904, 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

During the period that the red flag is displayed on Scoglio San Martino, navigation is prohibited in an area northward of a line joining Scoglio San Martino and Punta Pioppetto (page 385), within a distance of $6\frac{1}{2}$ miles from the firing point.

A mooring buoy, for the use of vessels superintending the practice, is moored about 2 cables north-westward of Scoglio San Martino.

Chart 3904.

ISOLE PONTINE.—Isle Pontine are five islands which are fragments of the crests of vast volcanic craters; they are divided into two distinct groups about 22 miles apart. Ponza, Palmarola and Zannone, which form the north-western and more important group, are situated between 15 and 20 miles south-south-westward of Capo Circeo; Ventotene and San Stefano form the south-eastern group about 30 miles south-south-eastward of that cape.

Current.—The currents are usually weak and are greatly influenced by the winds. After heavy gales they often run strongly in the channels between the islands, especially between Isola di Ponza and Isola di Zannone.

Isola di Palmarola.—Isola di Palmarola, the westernmost island of the group, lies with Punta Sconcello, its north-western extremity, about $18\frac{1}{2}$ miles south-south-westward of Capo Circeo. It is uninhabited, although parts of the island are cultivated by the inhabitants of Ponza who visit it for this purpose. Monte Tramontana, 771 feet (235^m1) high, near the northern end about 3 cables south-eastward of Punta Sconcello, and Monte Guarnieri, 860 feet (262^m1) high, about 9 cables southward of Monte Tramontana and near the southern end of the island, are its principal peaks, and the island has high, irregular coasts which are generally difficult of access. See view facing page 347.

Coast.—Rocks and dangers.—Anchorage.—Lo Sconcello, a bare conical rock, lies about half a cable northward of Punta Sconcello; Galera Grande and Galera Piccola are two low rocks lying about $2\frac{1}{2}$ cables west-south-westward of the point.

Cala del Porto, the best landing place and the only anchorage off the island, is a small cove with a sandy beach at its head, situated on the western side of the island about half a mile southward of Punta Sconcello. On the northern side of the cove are Scogli i Faraglioni, two large, bare and flattish rocks, 154 and 134 feet (46^m9 and 40^m8) high, and on its southern side is Promontorio di San Silverio, surmounted at an elevation of 230 feet (70^m1) by a small white chapel, and connected with the mainland by a low isthmus. Scoglio San Silverio lies about half a cable south-westward of the extremity of the promontory. The head of the cove is dominated by La Forcina, a distinctive, light-coloured rocky mass, 403 feet (122^m8) high, situated on the eastern coast of the island, about 6 cables south-south-eastward of Punta Sconcello. When seen by vessels approaching Cala del Porto from westward, La Forcina shows a summit with three distinct peaks.

During offshore winds, vessels with local knowledge may obtain anchorage, in depths of from $4\frac{1}{2}$ to 5 fathoms (8^m2 to 9^m1), sand, midway between Promontorio di San Silverio and the inner Scoglio Faraglioni, with the eastern extremity of the latter bearing 000° .

Punta delle Grottele (*Lat.* $40^\circ 56' N.$, *Long.* $12^\circ 51' E.$) is situated about 6 cables southward of Scoglio San Silverio with Faraglione di

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

Pallante, a high conical rock, partly covered with bushes, about half a cable south-westward of it. Punta di Mezzogiorno, the southern extremity of the island, lies about $2\frac{3}{4}$ cables southward of Punta delle Grottele.

A group of rocks and shoals fronts Punta di Mezzogiorno and extends more than half a mile southward and south-westward of it. Scoglio di Mezzogiorno, 348 feet (106^m1) high, situated about $1\frac{1}{4}$ cables south-westward of the point and connected with it by a ridge of shingle, is the largest of these rocks; Scoglio del Pidocchio, 236 feet (71^m9) high, lies close southward of Scoglio di Mezzogiorno and between them is the small Scoglio Fucile, which has a natural arch in it. Scoglio di Cappello, about three-quarters of a cable eastward of Scoglio del Pidocchio, is brown and when seen from south-westward is mushroom-shaped. Above-water and sunken rocks extend about 3 cables westward of Scoglio del Pidocchio, the south-westernmost of these being a low, blackish rock called Piana di Mezzogiorno. Banco di Mezzogiorno, on which the depths are less than 20 fathoms (36^m6), extends about $1\frac{1}{2}$ miles west-south-westward of Scoglio del Pidocchio; a 2-fathom (3^m7) rocky patch lies about $1\frac{1}{4}$ cables southward, a patch with a depth of $5\frac{1}{4}$ fathoms (9^m6), sand and weed, over it, lies about 4 cables westward, and an 8-fathom (14^m6) rocky patch lies about one mile west-south-westward, of Scoglio del Pidocchio.

Between Punta di Mezzogiorno and Punta Vardella, about half a mile east-north-eastward, the southern coast of Isola di Palmarola forms a bay, divided into two parts by Scoglio Suvace, a narrow elongated rock of white limestone, 98 feet (29^m9) high, at its southern end. The western and larger part of this bay is called Cala Brigantina and the eastern part Cala Vardella.

Punta Vardella is fringed by rocks which extend as much as 2 cables offshore; Secca Zirri, with a depth of 2 feet (0^m6) over it, lies about a quarter of a mile south-eastward of the point. Scoglio Fucile, bearing about 268° and seen midway between Scoglio di Mezzogiorno and Scoglio del Pidocchio, *see* view facing page 347, leads about one cable southward of Secca Zirri.

From Punta Vardella, the eastern coast of the island trends northward for about $1\frac{1}{2}$ miles to Punta Tramontana, its north-eastern extremity; this stretch of coast is fringed with rocks and presents few distinctive features. Seen from eastward, La Forcina (page 364) shows only one sharp summit. Scoglio Forcina, a small, low rock, lies close inshore about $1\frac{1}{4}$ cables south-eastward of La Forcina.

Punta Tramontana, the north-eastern extremity of the island, may be identified by a large high rock close off it; a shoal, with a depth of $2\frac{3}{4}$ fathoms (5^m0), rock, over it, lies about half a cable northward of this rock. From Punta Tramontana, the coast trends westward for about 3 cables to Punta Sconcello (*Lat.* $40^\circ 57' N.$, *Long.* $12^\circ 51' E.$).

ISOLA DI PONZA.—General remarks.—Isola di Ponza, the middle and largest of the north-western group of Isole Pontine, lies about 4 miles east-south-eastward of Isola di Palmarola. It is about 4 miles in length in a north-easterly and south-westerly direction, and is high, with a rugged and irregular outline which reaches its maximum elevation at Monte della Guardia, 928 feet (282^m8) high, close to its southern extremity. In 1941, the population of the island was about

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

6,500, the chief occupations of the inhabitants being fishing, agriculture and making wine.

There is a penal establishment at the village of Ponza on the eastern coast, and the coastal waters of the island are patrolled by police motor boats. Anchorage off, and landing on, the island are prohibited without previous permission, and to obviate possible inconvenience and delay, it is advisable to pass outside the territorial waters of the island unless actually proceeding to it.

Isolotto di Gavi.—Isolotto di Gavi (*Lat. 40° 56' N., Long. 13° 10' E.*) is situated about three-quarters of a cable east-north-eastward of Punta dell' Incenso, the north-eastern extremity of Isola di Ponza, from which it is separated by a shallow boat passage. The islet is 315 feet (96^m0) high with steep sides and is uninhabited; its north-eastern part, which terminates in Punta Rossa, about half a mile east-north-eastward of Punta dell' Incenso, is composed of red rock, the remainder of the islet being light-coloured limestone. For the dangers in the passage between Isolotto di Gavi and Isola di Zannone, see page 371.

Western side of Isola di Ponza.—Rocks and dangers.—Anchorage.—From Punta dell' Incenso, the coast trends west-south-westward for about 1½ miles to Punta del Papa, a point surmounted by an ancient white fort. Cala dell' Acqua is entered between Punta del Papa and Punta Corte, about 3 cables south-south-westward. It may be identified by two groups of white houses situated high up beyond its head; the southern group includes a church and the other group is situated above a high, dark entrance to a cave which is prominent from seaward. A 5½-fathom (10^m5) patch lies about three-quarters of a cable south-westward of Punta del Papa. The southern shore of the cove is fronted by rocks and shoals extending about three-quarters of a cable offshore in places, and a 2-fathom (3^m7) rocky patch lies in the middle of the cove, about 1½ cables from its head.

Vessels with local knowledge may obtain temporary anchorage in Cala dell' Acqua, in depths of about 11 fathoms (20^m1), a little inside the entrance, with Punta del Papa bearing 040°, distant 2 cables. Small vessels may anchor farther in on the northern side of the inlet, in depths of about 3 fathoms (5^m5), a little more than half a cable offshore. During winter, the current in this cove usually sets against the wind.

Cala Feola is entered between Punta Corte and Punta dei Forni, about 3 cables west-south-westward; its sides are very steep and are highest close to the entrance points. The shores of the cove are fringed with small rocks and one larger isolated rock, situated about a quarter of a cable from the head of the cove.

Cala Feola affords shelter from winds between north-east and south-west through east and south, and is preferable to other anchorages on the western coast of the island. Small vessels may obtain anchorage, in depths of about 5½ fathoms (10^m1), sand and weed, opposite two groups of houses situated on the slopes of the high ground. On a hill above the eastern side of the cove is the village of I. Forni, which in 1941 had a population of 2,089.

Capo Bosco, situated about 4 cables west-south-westward of Punta dei Forni, is a rocky point of a reddish colour which is distinctive owing

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

to its jagged outline, and when seen from north-eastward, to a small flat-sided rock, inclined towards, and attached to, the extremity of the cape.

I. Faraglioni, a prominent group of rocks, lies on a bank which extends about $3\frac{1}{2}$ cables westward from the coast about $3\frac{1}{2}$ cables southward of Capo Bosco. Faraglione Bianco, the largest and highest of the group, has a white patch which is especially noticeable from southward and south-westward. The outermost rock of this group should be given a berth of at least $1\frac{1}{4}$ cables.

Secca dei Mattoni (*Lat. 40° 54' N., Long. 12° 56' E.*), a small rock with a depth of less than 6 feet (1^m8) over it, lies about half a mile west-south-westward of Faraglione Bianco. Punta del Papa, bearing more than 053° and open north-westward of Capo Bosco, leads north-westward of this rock, and Punta della Guardia light-structure, *see* below, bearing less than 154° and open south-westward of Capo Bianco, *see* below, leads south-westward of it.

Capo Bianco lies about one mile southward of Faraglione Bianco and the coast between them is fringed with shoal patches, extending in places as much as 2 cables offshore.

Cala Chiaia di Luna, the largest bight in the island, is entered between Capo Bianco and Punta Fieno, about 7 cables south-south-eastward. It affords sheltered anchorage during north-easterly winds, but, with winds from south-eastward, there are sometimes violent squalls which necessitate vessels quitting the anchorage; with south-south-easterly and southerly winds, the sea rounds Punta della Guardia, the southernmost point of the island, and enters Cala Chiaia di Luna.

The bight has the appearance of an amphitheatre, bounded northward by the bare white cliffs of Capo Bianco and with its head surrounded by high vertical cliffs of yellowish rock with occasional darkish strata, at the foot of which is a long and narrow sandy beach. In front of this beach, about a quarter of a cable offshore, is a moderately high conical rock, and there are other rocks fringing the beach closer inshore. At the northern end of the beach, the cliffs are about 330 feet (100^m6) high and at its southern end is an old Roman tunnel lighted from above by apertures, the mouth of which is prominent from seaward.

There are depths of 5 fathoms (9^m1) about $3\frac{1}{2}$ cables, and of 3 fathoms (5^m5) about $1\frac{1}{2}$ cables, from the head of the inlet, and vessels may anchor in the middle of the bight on a sandy bottom. At night, Rotonda della Madonna light, on the eastern side of the island, is visible from the southern part of the inlet and forms a guide for making the anchorage. Vessels with local knowledge anchor in depths of $5\frac{1}{2}$ fathoms (10^m1) as soon as Punta della Guardia light becomes obscured behind the high land northward of it. Small vessels anchor off the conical rock at the head of the inlet and lie heading seaward with their sterns secured to this rock.

Punta della Guardia.—Lights.—

Signal station. — Punta della Guardia, the southern extremity of



*Punta della Guardia
light-tower.*

Chart 3904.

Isola di Ponza, is situated about $6\frac{1}{2}$ cables south-south-eastward of Punta Fieno; it is steep and rocky and rises to a conical summit.

A light is exhibited, at an elevation of 370 feet (112^m8), from a red, 5 octagonal tower, on a two-storeyed building, painted in red and white stripes, 58 feet (17^m7) in height, situated on the conical summit close within Punta della Guardia.

A light is exhibited, at an elevation of 315 feet (96^m1), from a hut 4 feet (1^m2) in height, situated at the foot of the same light-structure.

10 A signal station is situated at an elevation of 915 feet (278^m9) on the summit of Monte della Guardia, about half a mile north-north-eastward of Punta della Guardia. Storm warning signals are displayed, see page 11.

Eastern side of Isola di Ponza.—Coast.—From Punta dell' 15 Incenso (*Lat. 40° 56' N., Long. 13° 00' E.*), the eastern coast of the island trends south-westward for about $2\frac{1}{2}$ miles to Punta Santa Maria and is rugged and bare, with light-coloured limestone rock showing at various points.

Scoglio Evangelista, high and prominent, lies close to the coast 20 about one mile south-westward of Punta dell' Incenso; Spaccapolpo, a smaller reddish rock with a natural arch and covered with vegetation, lies close inshore about one cable northward of Scoglio Evangelista.

Cala d'Inferno, entered close south-westward of Scoglio Evangelista, is surrounded by steep cliffs which at its head are composed of white 25 limestone between two yellowish strips of rock; at the foot of this white cliff is a natural quay where boats may land, and steps leading to the interior of the island are cut in the cliff.

Cala del Core and Cala del Frontone lie about 4 cables, and one mile, respectively, southward of Cala d'Inferno. The former is of 30 little importance but the latter affords anchorage to moderate-sized vessels during strong westerly winds.

Chart 1596, plan of Porto di Ponza.

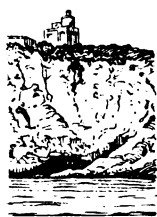
Cala di Ponza.—Lights.—Dangers.—Cala di Ponza is entered between Punta Santa Maria and Punta Pilato, about $4\frac{1}{2}$ cables south- 35 eastward. Punta Pilato is the north-eastern extremity of Rotonda della Madonna, a rocky peninsula which extends about $2\frac{1}{2}$ cables east-north-eastward from the adjoining coast.

A light is exhibited, at an elevation of 200 feet (61^m0), from a white pentagonal tower on a two-storeyed dwelling, with grey supports and cornices, 42 feet (13^m0) in height, situated on Rotonda della 40 Madonna.

A light is exhibited, at an elevation of 183 feet (55^m8), from a hut situated on the flat roof of the 45 above-mentioned light-structure.

Punta Santa Maria is fronted by several rocks, the largest and outermost of which is named Scoglio Ravia and lies about three-quarters of a cable eastward of the point; it is steep 50 and is surmounted by a rectangular white house which is used as a police lookout. A stout mooring post stands on the north-eastern extremity of Scoglio Ravia, and another mooring post stands on a rock between Scoglio Ravia and Punta Santa Maria.

Secca della Ravia, two rocky patches with depths of 2 and $2\frac{1}{4}$ fathoms



45 *Rotonda della Madonna light-tower.*

Chart 1596, plan of Porto di Ponza.

(3^m7 and 4^m1) over them, lie about three-quarters of a cable eastward of Scoglio Ravia.

Punta della Madonna is the extremity of a chain of rocks extending about 1½ cables eastward from the south-eastern extremity of the coast of Rotonda della Madonna. Scoglio Rosso is a steep-to islet lying about one cable north-north-eastward of Punta Pilato. Scoglio Sotto Torre lies close to the southern side of Cala di Ponza, about 1½ cables westward of Punta Pilato.

The head and western side of Cala di Ponza are fronted by a bank, 10 which, with depths of less than 3 fathoms (5^m5) over it, extends about one cable offshore in places.

Punta del Torrione, about 2½ cables south-westward of Punta Santa Maria, is the north-eastern extremity of a rocky part of the coast which is pierced by a tunnel forming part of the main road between the villages of Santa Maria and Ponza; there is a mooring post on a detached rock close off the point. Spiaggia Santa Maria lies on the northern side of Punta del Torrione. Spiaggia Ciangos and Spiaggia di San Antonio, two sandy beaches at the head of Cala di Ponza, are separated by Punta Ciangos, a rocky promontory pierced by a tunnel, about 2 cables southward of Punta del Torrione (*Lat.* 40° 54' N., *Long.* 12° 58' E.).

Porto di Ponza.—Quayage.—Light.—Porto di Ponza is protected from northward by Mario Musco, a mole which projects about 400 feet (121^m9) west-north-westward from the southern shore of Cala di Ponza, about 2½ cables westward of Punta Pilato. Mario Musco is quayed on its inner side and is protected by a breakwater which runs parallel with it at a distance of about 100 feet (30^m5) north-north-eastward. During strong north-easterly winds, the sea breaks over the breakwater and the area between it and Molo Mario Musco cannot be used as a shelter by any craft. Principe di Napoli, a stone quay, 476 feet (145^m1) in length, occupies the southern side of the harbour; both this quay and Mario Musco are fitted with bollards and mooring rings.

There are depths of about 3½ fathoms (6^m4) in the middle of the harbour, decreasing to about 1½ fathoms (2^m3) a few yards from the quays, except close to the outer part of Mario Musco, where there are depths of 13 feet (4^m0). Vessels not exceeding 200 feet (61^m0) in length and 13 feet (4^m0) in draught can enter the harbour. The two berths alongside the outer part of the mole are normally reserved for the mail steamers and for Italian Government vessels.

A light is exhibited, at an elevation of 39 feet (11^m9), from a red octagonal tower, 41 feet (12^m5) in height, situated on the head of the mole.

Anchorage.—Directions.—There is anchorage in depths of from 5½ to 12 fathoms (10^m1 to 21^m9), mud, between lines joining Rotonda della Madonna light-structure with Scoglio Ravia, and the head of the breakwater with the centre of Spiaggia Santa Maria. Except during north-westerly winds, it is preferable to anchor in the southern part of the anchorage as the holding ground there is better. Small vessels can anchor, in depths of from 3½ to 3¾ fathoms (5^m9 to 6^m9), in line with the breakwater or the mole, at such distance from their heads so as not to inconvenience small sailing craft entering and leaving the harbour.

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 1596, plan of Porto di Ponza.

Winds between east-north-eastward and east-south-eastward most affect this anchorage and, if strong, send in a heavy sea. In winter, with north-easterly winds, the anchorage is dangerous and it is therefore advisable to moor with open hawse. With strong westerly winds, good anchorage may be found in Cala del Frontone (page 368).

Vessels should approach Cala di Ponza keeping the molehead light-structure bearing 230° , which leads midway between Scoglio Rosso and Secca della Ravia.

- 10 **Submarine cables.—Beacons.**—Submarine telegraph cables are landed close southward of Spiaggia di Santa Maria; the landing place is indicated by two beacons, about 27 yards (24^m7) apart, each surmounted by a sphere, the upper half painted yellow and the lower half black. Anchoring and fishing are prohibited within a distance of
15 about half a cable on either side of a line drawn in a 105° direction for about 3 cables from the landing place.

Seaplane regulations.—When seaplanes are leaving, alighting, or exercising in Cala di Ponza, they do so in the area bounded by lines drawn from Scoglio Rosso to Scoglio Sotto Torre, from Scoglio Sotto
20 Torre to Punta del Torrione, from Punta del Torrione to Scoglio Ravia, from the northern end of Scoglio Ravia to a position about $3\frac{1}{4}$ cables 090° , and from this position to the eastern side of Scoglio Rosso.

During these movements a blue flag will be displayed at the head of the mole.

- 25 Vessels about to depart or enter the bay when the signal is displayed should await the completion of the movements; sailing vessels and all small craft under way, under steam or otherwise, must keep clear of the seaplanes. Should a sailing vessel from any circumstances be unable to keep clear of a seaplane, she should keep a steady course.

- 30 **Ponza village.—Port facilities.**—The village of Ponza (*Lat.* $40^{\circ} 54' N.$, *Long.* $12^{\circ} 58' E.$), which in 1941 had a population of 2,787, lies stretched along the southern and eastern sides of the harbour. The cupola of the parochial church, situated about three-quarters of a cable east-south-eastward of the root of the mole, and a rectangular castle,
35 now in use as a barracks, situated a short distance north-eastward of the church, are prominent landmarks. There is a small hospital in the village.

Small quantities of fresh provisions may be obtained.

- A limited quantity only of fresh water may be obtained as the
40 inhabitants are mainly dependent on rain water.

Repairs to small craft can be undertaken; there are three patent slipways, the largest of which can take vessels up to 90 tons.

There is regular sea communication between Ponza and Gaeta and also between Ponza and Napoli.

- 45 *Chart 3904.*

- Eastern side of Isola di Ponza (continued).—Coast.—Off-lying danger.**—Between Punta della Madonna and Punta della Guardia, about $1\frac{1}{2}$ miles south-westward, the coast is bare and rugged with no distinctive features except for Scogli Calzone del Muto, two steep-to
50 islets, situated close inshore about midway between the two points.

Le Formiche are a group of shoals and rocks, the latter just showing above water, lying between 5 and 7 cables south-eastward of Punta della Madonna. They are covered by the *red* subsidiary light from Punta della Guardia light-structure between the bearings of 235° and

Chart 3904.

265°, and by the *red* subsidiary light from Rotonda della Madonna light-structure between the bearings of 301° and 341°.

Rotonda della Madonna light-structure bearing 000° leads between Le Formiche and Scogli Calzone del Muto until Punta della Guardia light-structure is in line with the southern Scoglio Calzone del Muto, bearing about 240°, which leads north-westward of them. 5

Isola di Zannone.—**Light.**—**Dangers.**—Isola di Zannone lies with Capo Nero, its northern extremity, about 3½ miles north-eastward of Punta Rossa (page 366) ; it is about 8 cables long in an east-west direction and about 6 cables in a north-south direction. From Monte Pellegrino, 604 feet (184^m1) high, situated in the northern part of the island, about 2 cables south-south-eastward of Capo Nero, the land gradually slopes down to the south coast which is rocky and steep-to generally. The island is wooded in several places but is only inhabited by the lighthouse keepers and by a few woodsmen. 15

A light is exhibited, at an elevation of 125 feet (38^m1), from an octagonal tower on a one-storeyed dwelling, painted in red and yellow stripes, 43 feet (13^m1) in height, situated on Capo Nero.

The north-eastern coast of the island is fringed with rocks and 20 fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends in places about 1½ cables offshore. Scoglio Mariolo, about 2 feet (0^m6) high, lies about half a cable north-westward of the western extremity of the island and about half a mile west-south-westward of Capo Nero. Secca Mariolo, a 2¼-fathom (4^m1) rocky 25 patch, lies about three-quarters of a cable westward of Scoglio Mariolo. Punta Varo, the south-western extremity of the island, lies about 3½ cables south-south-eastward of Scoglio Mariolo.

Landing places.—Landing can be effected either eastward or westward of Capo Nero. During northerly winds, landing can be effected at Il Varo, a small cove with rocky shores situated close north-westward of Punta Varo, where there is a small quay with depths alongside of 3 feet (0^m9). These landing places are all connected by paths, which pass close to a small white hut and some ruins, situated about 1½ cables northward of Punta Varo (*Lat.* 40° 58' N., *Long.* 35 13° 03' E.), and plainly visible from the southern slopes of the island. 35

Passage between Isola di Ponza and Isola di Zannone.—**Dangers.**—A bank on which the depths are less than 20 fathoms (36^m6) extends between Isola di Ponza and Isola di Zannone. There are numerous dangers in the passage between Punta Rossa and Punta Varo, about 2½ miles north-eastward. 40

Le Scoglietelle are a group of low rocks lying between 2½ and 3½ cables eastward of Punta Rossa, with depths of from 8 to 12 fathoms (14^m6 to 21^m9) in the channel between the point and the group. A rocky patch, with a depth of 4½ fathoms (8^m2) over it, lies about 2½ cables south-south-eastward of Le Scoglietelle. 45

Piana di Mezzo is a low rock, situated about 3½ cables north-eastward of Le Scoglietelle ; a rock, with a depth of less than 6 feet (1^m8) over it, lies close south-westward of Piana di Mezzo. 50

Scoglio Grosso, a moderately high conical rock, situated about half a mile north-eastward of Piana di Mezzo, is the most easily distinguished of the dangers in the passage ; it is steep-to on its western side, but a rocky spit, on which the depths are less than 6 feet (1^m8), extends

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

about half a cable eastward of it. There is a least depth of about 12 fathoms (21^m9) in the channels between Le Scoglietelle and Piana di Mezzo and between the latter and Scoglio Grosso.

- 5 Secca del Varo, a rocky patch with a depth of 1½ fathoms (2^m3) over it, lies about 1½ miles north-eastward of Scoglio Grosso and about 3½ cables south-westward of Punta Varo. A 6½-fathom (11^m9) rocky patch lies about a quarter of a mile west-south-westward of Secca del Varo. The channel between Scoglio Grosso and Secca del Varo, and
10 that between the latter shoal and Punta Varo, are deep.

Scoglio della Botte.—Scoglio della Botte, a bare rock with steep sides, is 61 feet (18^m6) high and steep-to; it lies about 7 miles east-south-eastward of Punta della Madonna, Isola di Ponza.

- Isola di Ventotene.**—Isola di Ventotene, the larger and western of
15 the two islands forming the south-eastern group of Isole Pontine, lies with Punta dell' Arco, its southern extremity, about 21 miles east-south-eastward of the southern extremity of Isola di Ponza. The island attains its greatest elevation of 456 feet (139^m0) at Monte dell' Arco, close within its southern extremity, whence it gradually decreases
20 in elevation to Punta d'Eolo (Nevola), 56 feet (17^m1) high and the northern extremity of the island, situated about 1½ miles north-eastward of Monte dell' Arco. The coasts of the island are rocky, and, except in the few places mentioned below, landing is difficult. Isola di Ventotene and the adjacent Isola di San Stefano together form the
25 remains of an ancient volcanic crater.

In 1941, the population of Isola di Ventotene was about 1,400; there is a penal establishment on the island.

North-western side of the island. — Coast. — Dangers. —

- Anchorage.**—From Punta d'Eolo, the coast trends south-westward
30 for about 3½ cables to a point fringed by rocks extending about half a cable offshore. For about a quarter of a mile north-eastward of this latter point, the coast is fronted by a bank which, with depths of less than 2 fathoms (3^m7) over it, extends about 2½ cables offshore. Lo Sconcioglio (*Lat. 40° 48' N., Long. 13° 25' E.*), an above-water rock, lies
35 close to the edge of this bank, about 2½ cables westward of Punta d'Eolo and another smaller rock lies on the edge of the bank, about three-quarters of a cable farther southward. A rock, with a depth of less than 6 feet (1^m8) over it, lies on the western extremity of the bank, about half a cable westward of Lo Sconcioglio.

- 40 Cala Parata Grande is entered between the point fringed by rocks, mentioned above, and another point about 2 cables south-south-westward; it has rocky shores with comparatively wide stretches of beach in its inner part. A rocky bank, on which the depths are less than 2 fathoms (3^m7), fronts the northern shore of the cove, extending
45 about one cable offshore. The mail steamer calls here when, owing to easterly winds, she is unable to communicate with Porto Nicola. A pathway connects the head of the cove with the village of Ventotene.

- Vessels with local knowledge can obtain anchorage in Cala Parata Grande, about 1½ cables offshore, in depths of about 4½ fathoms (7^m8);
50 the bottom is rocky and the use of an anchor buoy is advisable.

From the southern entrance point of Cala Parata Grande, the coast trends south-westward for about one mile to Punta dell' Arco, the low, flat extremity of a rocky promontory with steep and rounded sides. A one-fathom (1^m8) rocky patch lies about three-quarters of a cable

Chart 3904.

westward of the point and a $1\frac{1}{2}$ -fathom (3^m3) patch lies about $1\frac{1}{2}$ cables northward of the point and about three-quarters of a cable offshore.

Submarine cable.—Beacon.—A submarine telegraph cable is landed at Cala Parata Grande; its landing place is marked by a beacon consisting of a post surmounted by a sphere, painted green with a white T. Anchoring and fishing are prohibited within about half a cable on either side of a line drawn in a 272° direction for about 3 cables from the beacon. 5

Eastern side of the island.—Coast.—From Punta d'Eolo, the coast trends south-south-eastward for about 2 cables to Cala Rossano, a cove with rocky shores which are fringed with rocks; Scoglio Romanello, the largest and outermost rock, lies off the southern shore of the cove. Cala Rossano has depths of from $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms (3^m2 to 4^m1), but landing is difficult and the cove is little used. 15

Porto Nicola.—Depths.—Light.—The small harbour of Porto Nicola, the entrance to which lies about 2 cables south-south-eastward of Cala Rossano, was constructed in the Roman epoch, being entirely excavated from the rock.

Punta del Pertuso, a rocky promontory faced with masonry, forms the northern and north-eastern sides of the harbour. The funnel-shaped entrance faces eastward and is about 100 feet (30^m5) wide at its inner and narrower end; there are depths of about 20 feet (6^m1) in mid-channel in the entrance and of from 10 to 13 feet (3^m0 to 4^m0) at the sides. Il Puzzillo, a cul-de-sac opposite the entrance, is about 130 feet (39^m5) long, with depths of about 7 feet (2^m1). Porto Nicola consists of a basin the western side of which is lined with quays, with depths alongside of from 10 to 13 feet (3^m0 to 4^m0), but a rock, with a depth of 6 feet (1^m8) over it, lies close within the inner end of the entrance and limits access to the basin to vessels of a draught not exceeding 4 feet (1^m2). In calm weather, vessels may berth off the southern side of the entrance, with bows in Il Puzzillo. 20

A light is exhibited, at an elevation of 28 feet (8^m5), from a red iron standard on a base, 18 feet (5^m5) in height, situated on the southern side of the entrance to Porto Nicola (*Lat. $40^\circ 48' N.$, Long. $13^\circ 26' E.$*). 35

Port facilities.—The village of Ventotene, which in 1941 had a population of 888, stands on sloping ground close westward of the harbour; it is dominated by a large yellow rectangular castle at the southern end of the village.

Fresh provisions are scarce but can be supplied from Napoli by arrangement with the Ventotene-Napoli steamer. 40

Fresh water is scarce and only a limited supply is normally available.

There is regular sea communication between Ventotene and Napoli and between Ventotene and Gaeta.

South-eastern side of the island.—Coast.—Danger.—Scoglio La Nave, a dark bare rock, 36 feet (11^m0) high, lies about $1\frac{1}{2}$ cables southward of the entrance to Porto Nicola and about half a cable offshore; there are two smaller rocks between Scoglio La Nave and the coast. 45

Cala Battaglia is a small cove on the north-eastern side of a narrow point projecting southward from the coast about 7 cables south-westward of the entrance to Porto Nicola; the cove may be used as a landing place in calm weather. From Cala Battaglia, the coast trends west-south-westward for about three-quarters of a mile to Punta dell' Arco. 50

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3904.

Between Scoglio La Nave and Cala Battaglia, the coast is fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends as much as 3½ cables offshore.

- 5 **Isola di San Stefano.—Dangers.**—Isola di San Stefano is situated about three-quarters of a mile east-south-eastward of Scoglio La Nave ; it is of a rounded shape, steep-to, and with steep and rocky coasts. The slopes of the island are cultivated, and on its summit, at an elevation of 223 feet (68^m0), is the yellow, circular building of a convict
10 prison, which is prominent.

A shoal, with a depth of 4 fathoms (7^m3) over it, lies about 1½ cables westward, and another shoal, with a depth of 5½ fathoms (10^m1) over it, lies about 2½ cables west-south-westward, of Punta Romanello, the western extremity of the island.

- 15 **Submarine cable.—Beacons.**—A submarine telegraph cable crosses, in about a 290° direction, between Punta Romanello and Punta Marillo, situated on the eastern side of Isola di Ventotene close southward of the entrance to Porto Nicola. The landing place of the cable on each island is indicated by a beacon, surmounted by a sphere,
20 painted green with a white T. Anchoring and fishing are prohibited within a distance of half a cable on either side of a line joining Punta Romanello and Punta Marillo.

- Landing places.**—There are three landing places, used according to the direction of the wind. The Marinella landing place, situated on
25 the north-western side of the island, about one cable north-eastward of Punta Romanello, is the best and most frequented ; it consists of a quay with steps, at which craft carrying goods for the convict prison often berth. No. 4 landing place, so-called from the number on the prison gateway approached from it, is situated on the north-eastern
30 side of the island, about 3½ cables eastward of Punta Romanello ; it may be identified by the steps cut in the rocky path leading up to the prison from it. Spasaro landing steps (*Lat.* 40° 47' N., *Long.* 13° 27' E.), the third landing place, is situated on the southern side of the island, close westward of the Porticciullo, a cove with high rocky
35 shores, which may be identified by a masonry hut standing above it.

Charts 1841, 676, 1440, 2158a, 2158b, 449.

CHAPTER XI

WESTERN COAST OF ITALY—GOLFO DI NAPOLI

CLIMATE AND WEATHER.—*See* page 30.

Charts 3931 and 1728.

GOLFO DI NAPOLI.—**General remarks.**—Golfo di Napoli is entered between Punta di Fumo with Isole Flegree off it, and Punta Campanella (*Lat.* 40° 34' N., *Long.* 14° 20' E.) with Isola di Capri off it, about 18 miles south-eastward. Bocca Grande, the main entrance, lies between Isola d'Ischia, the outermost island of Isole Flegree, and Isola di Capri, and is about 14 miles wide. The other entrances are Canale di Procida, about 1½ miles wide between the coast of the north-western side of the gulf and Isola di Procida, the innermost island of Isole Flegree; Canale d'Ischia, about 1½ miles wide between Isola di Vivara and Isola d'Ischia; and Bocca Piccola, about 2½ miles wide between Isola di Capri and the coast on the south-eastern side of the gulf. *See* views on chart 1728.

The shores of the gulf form three spacious bights, Golfo di Pozzuoli and Rada di Napoli on the northern side, and Rada di Castellammare di Stabia on the eastern side. The city of Napoli lies stretched along the head of Rada di Napoli.

Monte Vesuvio, 3,891 feet (1,186^m0) high, dominates the head of the gulf, and owing to its isolated position in the midst of low land and to the high plume of smoke continually issuing from its crater, is easily identified from seaward. The northern side of the gulf is hilly but less elevated than the southern side and has many craters of extinct volcanoes. A ridge of mountains extends the whole length of Penisola Sorrentina, a peninsula which forms the south-eastern side of the gulf. Monte Sant' Angelo, 4,734 feet (1,442^m9) high, situated at the eastern end of the ridge, is the highest and most prominent peak; it is known locally as Monte Sant' Angelo a Tre Pizzi.

Currents.—**Sea level.**—The currents in the gulf are not very strong and generally follow the direction of the wind. With southerly winds, the current enters through Bocca Piccola, runs along the shores of the gulf in an anti-clockwise direction and thence sets westward through Canale di Procida at an increased rate. With offshore winds, there is an east-going current in the gulf, which runs out through Bocca Piccola, often attaining a rate of 2 knots.

Charts 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Charts 3931 and 1728.

The sea level at the head of the gulf is raised during southerly winds and with offshore winds is correspondingly lowered, but the maximum variation in level through these causes does not exceed 3 feet (0^m9).

5 **Measured distances.**—There are three measured distances, for speed trials, in Golfo di Napoli; one, of 66,254 feet (20,194^m2), with a minimum depth of 66 fathoms (120^m7) on the running line, is situated southward and eastward of Isola d'Ischia; one, of 17,723 feet (5,402^m0), also with a minimum depth of 66 fathoms (120^m7) on the running
10 line, is situated south-eastward of Isola di Procida; the third, of 18,698 feet (5,699^m2), with a minimum depth of 16 fathoms (29^m3) on the running line, is run between the same limits as the second measured distance but on a different running line. The two latter measured distances are each divided into three sections.

15 The running line of the first-mentioned measured distance is Casa Constanzo, situated on Monte Sant' Angelo (*Lat.* 40° 39' N., *Long.* 14° 25' E.), in line with a mark on the ruins of the church of San Michele on Monte Sant' Angelo a Tre Pizzi (*Lat.* 40° 39' N., *Long.* 14° 31' E.), bearing 090°.

20 The western limit is the alignment of a white pillar on Punta Sant' Angelo, the southern extreme of Isola d'Ischia, with a white pillar on Monte Epomeo (*see below*); the eastern limit is the light-structure on Scoglio Vervece (*Lat.* 40° 37' N., *Long.* 14° 20' E.) in line with a white pillar on Punta San Lorenzo (*see page 416*). In 1947, this
25 measured distance was out of use owing to the marks having been destroyed during hostilities.

The measured distance between these limits is 66,254 feet (20,194^m2).

The running line of the second measured distance is the light-structure on Capo Miseno (*see page 387*) in line with the Campanile in
30 Camaldoli di Napoli (*see page 396*), bearing 044°.

The western limit is a white pillar on the rocks on the north-eastern side of Castello d'Ischia in line with the grey-roofed tower of Villa Belvedere, situated within the north-eastern point of Isola d'Ischia;
35 the eastern limit is a black and white pillar on Punta dei Monaci, about 4 cables south-south-westward of the eastern extremity of Isola di Procida, in line with the flagstaff on Casa Nugnes, at which, if previous arrangements are made, the owner will display the Italian national flag.

40 Between these limits, the measured distance of 17,723 feet (5,402^m0) is divided into three sections by the following alignments:—

A black and white pillar, situated on Punta Socciaro, in line with Torre Margherita, at the south-western end of Isola di Procida (*see page 385*).

45 A black and white pillar, on the roof of a building situated on Punta Pizzaca (*page 387*), in line with the cupola of Casa Figolo.

The western section is 10,229 feet (3,117^m8) in length;

the middle section 5,161 feet (1,573^m1);

and the eastern section 2,333 feet (711^m1) in length.

50 The third measured distance has the same limiting alignments as the second distance, but the running line is a white pillar situated on Punta San Pancrazio, the south-eastern extreme of Isola d'Ischia, ahead, bearing 233°, and the light-structure on Capo Miseno, astern, bearing 053°.

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Charts 3931 and 1728.

The total length of this measured distance is 18,698 feet (5,699^m2).

The lengths of the sections are :—

Eastern section—2,977 feet (907^m4) ;

Middle section—5,118 feet (1,560^m0) ;

Western section—10,603 feet (3,231^m8).

5

Chart 3931.

ISOLE FLEGREE.—Isle Flegree are a group of islands comprising Isola di Procida, situated about 1½ miles south-south-westward 10 of Punta di Fumo (page 363), with Isola di Vivara lying close off its south-western extremity and Isola d'Ischia, about 2 miles farther west-south-westward.

Isola d'Ischia.—Isola d'Ischia, the largest of the group, although volcanic in origin, has few traces of lava on the surface and is almost 15 entirely covered with vegetation. Monte Epomeo, or Monte di San Nicola, the summit of the island, is 2,598 feet (791^m2) high and has two sharp peaks, close together ; from north-westward or south-eastward, the two peaks appear as one, and on the southern slopes of the south-eastern and sharper peak is the small sanctuary of San Nicola. 20

Isola d'Ischia produces abundance of fruit and is renowned for its wine ; it is frequented for its hot mineral springs. The climate is excellent, humidity is moderate and snow and hail of very rare occurrence. Fishing and agriculture are the principal industries.

Western coast of the island.—Dangers.—Between Punta del 25 Caruso (*Lat.* 40° 45' N., *Long.* 13° 52' E.), the north-western extremity of the island, and Punta Imperatore, about 3 miles southward, the western coast of the island is fronted by rocks and shoals and must be approached with caution. Within Punta del Caruso, the land rises to Guardiola di Zale, 377 feet (114^m9) high, about 3 cables eastward. 30 The church and convent of San Francesco di Paola, a prominent group of white buildings, stands close to the head of La Scivica, an inlet situated about 4 cables south-eastward of Punta del Caruso. Between Punta del Caruso and Punta del Soccorso, about 1½ miles south-south-westward, the coast is fronted by a bank which, with depths of less 35 than 3 fathoms (5^m5) over it, extends as much as 2 cables offshore.

Forio.—Light.—Dangers.—The town of Forio, which in 1941 had a population of about 5,100, is situated close eastward of Punta del Soccorso. There are fifteen old towers near the coast westward and northward of the town, besides Torrione, a large and prominent 40 cylindrical tower, which rises from among the buildings in the town. Soccorso church, white in colour, stands on Punta del Soccorso at the western end of the town and is also prominent.

The harbour is protected from westward by a mole which extends about three-quarters of a cable north-north-eastward from the coast 45 northward of the town, and about one cable east-north-eastward of Punta del Soccorso ; it is quayed on its eastern side but the harbour is subject to rapid silting and can only afford shelter to very small craft and boats. A stone pier, about 200 feet (61^m0) in length which is only available to boats, projects from the coast close westward of the 50 town.

A light is exhibited, at an elevation of 39 feet (11^m9), from a red iron column, 16 feet (4^m9) in height, situated on the head of the mole.

Scogli Impiso, two small black rocks, the western and larger of

Charts 1841, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

which is about 10 feet (3^m0) high, lie close together near the coast about 2½ cables east-north-eastward, and Le Camerate, two rocks awash, lie about 2½ cables west-north-westward, of the mole head.

- 5 There is anchorage, in depths of about 7 fathoms (12^m8), with the head of the mole bearing about 190°, distant about 1½ cables. This anchorage is untenable during onshore winds.

Coast.—Dangers.—From Punta del Soccorso, the coast trends southward for about 1½ miles to Punta Imperatore; the northern part of this stretch consists of rocky and much eroded cliffs for about 8 cables southward of Punta del Soccorso, whence a white sandy beach extends about half a mile southward as far as the root of the rocky promontory terminating in Punta Imperatore.

- 15 The whole of the above stretch of coast is fronted by a rocky bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as 3 cables offshore; numerous groups of above-water rocks lie on the inner part of this bank, among them being Scogli Lurio, about 1½ cables south-westward of Punta del Soccorso, Pietre Rosse, about three-quarters of a mile north-north-eastward, and Pietra Bianca, 20 about half a mile north-eastward, of Punta Imperatore.

- There are also several detached rocky patches on this stretch, the outermost being a 5-foot (1^m5) patch about 2¾ cables west-south-westward of Punta del Soccorso, and a 16-foot (4^m9) patch about 5¼ cables south-westward of the same point. Scoglio Pietra Nera (Lat. 40° 43' N., Long. 13° 51' E.), a detached above-water rock, lies about 2¾ cables northward of Punta Imperatore.

- Punta Imperatore. — Light. —**
Signal station.—Punta Imperatore is the extremity of a promontory which forms an imposing mass, 745 feet (227^m1) high, and can easily be identified by a signal station on the summit and a light-house on its western slopes. A shoal bank, with depths of 10 feet (3^m0) over it, extends about 1½ cables westward of the point.

- A light is exhibited, at an elevation of 538 feet (164^m0), from a white tower on a two-storeyed dwelling, 40 44 feet (13^m4) in height, situated on Punta Imperatore.

A signal station is situated on the summit of Punta Imperatore promontory, about 2 cables eastward of the extremity of the point.

- Southern coast of the island.—Aspect.**—Between Punta Imperatore and Punta San Pancrazio, about 4¾ miles eastward, the southern 45 coast of Isola d'Ischia is steep, high and rocky, and is clear of dangers. Within the coast, the ground is entirely covered by vineyards which extend up to the steepest spurs of the high ground. From an offing, Monte Epomeo is prominent and the village of Serrara may be distinguished near the foot of its southern slopes.

- 50 **Coast.**—Scoglio La Nave, a moderately high and dark rock, lies close inshore about a quarter of a mile south-south-eastward of Punta Imperatore; Scogli Chianara, a group of low rocks close to the coast about three-quarters of a mile south-eastward of the same point, are difficult to distinguish even from a short distance. The sanctuary of



Punta Imperatore light-tower.

Chart 3931.

San Nicola, situated close to the summit of the south-eastern peak of Monte Epomeo, is prominent from off this part of the coast.

Punta del Chiarito, situated about $1\frac{1}{2}$ miles east-south-eastward of Punta Imperatore, has, due to erosion, the appearance of a claw. 5
Punta Sant' Angelo, the southern extremity of Promontorio di Sant' Angelo and also the southernmost point of the island, lies about 7 cables east-south-eastward of Punta del Chiarito. Promontorio di Sant' Angelo is a peninsula of grey volcanic rock which is connected with the mainland by a low sandy isthmus at the northern end of 10
which stands the village of Sant' Angelo with the church of San Michele close northward of it. A white pillar stands on the point and a ruined tower surmounts Promontorio di Sant' Angelo.

The promontory separates two bights where shelter may be obtained during northerly winds. At the head of the eastern bight, between 15
the church of San Michele and Punta Maronti, about one mile eastward, is Marina di Maronti, a beach from which two deep valleys ascend.

Between Punta Maronti and Punta San Pancrazio, about $1\frac{1}{2}$ miles eastward, the coast is formed by the sides of Monte Barano and is steep 20
and rocky, decreasing in elevation towards Punta San Pancrazio, the south-eastern extremity of the island, which is steep-to, inaccessible and surmounted by a small square pillar.

Northern coast of the island.—Coast.—Punta Cornacchia, a dark, low and rocky point forming the northern extremity of Isola 25
d'Ischia, lies about half a mile east-north-eastward of Punta del Caruso (page 377); this point is also the northern extremity of Promontorio Guardiolo di Zale, a bold headland bounded by cliffs. Punta di Zale, close south-eastward of Punta Cornacchia, may be identified by a prominent villa resembling a large grey square tower with white 30
cornices, situated on the point, and by a smaller villa on a hill close behind it. Punta Vico, situated about 7 cables east-south-eastward of Punta Cornacchia, is the north-eastern extremity of Promontorio di Vico, a headland, 413 feet (125^m9) high, with rocky precipitous sides and a rounded and cultivated upper part. Torre di Vico, squat and 35
square, is situated in a cemetery enclosed by a white stone wall, close westward of and overlooking the point. Seno di San Montano, a cove entered between Punta di Zale and the north-western extremity of Promontorio di Vico, has rocky inaccessible sides and a sandy beach at its head. 40

Lacco Ameno.—Rocks and dangers.—Light.—The village of Lacco Ameno (*Lat.* $40^\circ 45' N.$, *Long.* $13^\circ 54' E.$) lies stretched along the coast with its western end situated about a quarter of a mile southward of Punta Vico; a yellowish square tower and a two-storeyed house, the upper part of which is painted red and the lower part white, 45
are prominent at the western end of the village.

Pietra del Lacco, a greenish rock about 33 feet (10^m1) high, lies about three-quarters of a cable offshore near the eastern end of the village; Pietra Piccola, a low, darkish rock, lies close westward of the western end of Pietra del Lacco. A breakwater extends about 328 feet 50
(100^m0) west-north-westward, parallel with the coast, from the western side of Pietra del Lacco. Belvedere, a rock lying close offshore south-south-eastward of Pietra del Lacco, is prominent on account of its bright yellow and reddish colours. On the coast southward of Pietra

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

del Lacco is a small quayed masonry mole, with depths of about 7 feet (2^m1) alongside its eastern side.

- Piana Maggiore, with a least depth of 3 feet (0^m9) over it, lies about 5 1½ cables north-north-westward, and Piana Minore, with a least depth of 2½ feet (0^m8) over it, lies about half a cable north-north-westward, of Pietra del Lacco. These dangers are partially covered by the *red* sector of Lacco Ameno light, *see* below, between the bearings of 147° and 172°.

- 10 Between Pietra del Lacco and the small mole is a shoal named Zavorra.

A light is exhibited, at an elevation of 46 feet (14^m0), from a grey iron framework structure on a tank, 20 feet (6^m1) in height, situated on a rock on the beach abreast the village of Lacco Ameno.

- 15 **Jetty.—Harbour.**—A small masonry jetty projects about 72 feet (21^m9), from the coast close westward of Belvedere; there are depths of about 3 feet (0^m9) alongside its head.

- A small harbour, in which there are general depths of 5 feet (1^m5), is formed by a breakwater extending 131 feet (39^m9) northward from 20 the coast close westward of the small mole, with another breakwater extending 328 feet (100^m0) westward parallel with the coast, from the outer end of the first breakwater.

- A narrow inlet, which affords shelter to fishing boats, is formed between the coast and a dark-coloured rock which extends a short 25 distance eastward from Belvedere.

Fishing nets.—Tunny nets extend about three-quarters of a mile northward from a position on the coast about 2 cables west-north-westward of Lacco Ameno light-structure.

- Anchorage.**—The best anchorage is eastward of Pietra del Lacco 30 where the bottom is mud and good holding ground. Vessels with local knowledge sometimes moor north-eastward of Pietra del Lacco and secure their sterns to that rock. Small craft can berth under the lee of the rock, securing the bows to Pietra del Lacco and the stern to the shore.

- 35 Vessels of a draught exceeding 7 feet (2^m1) should anchor eastward of a line joining Pietra del Lacco and the mole southward of it, where there are depths of over 10 feet (3^m0).

- Coast.—Light.**—From Lacco Ameno light-structure, the coast trends eastward for about 1½ miles to Punta della Scrofa, a steep and 40 rocky point on which is a cemetery enclosed by a light-coloured wall, and thence trends east-south-eastward for about 8½ cables to the entrance to Porto d'Ischia. The village of Casamicciola, which in 1941 had a population of 3,980, lies on the slopes of the hills about one mile east-south-eastward of Lacco Ameno light-structure and about 3 cables 45 inland. The houses of Marina di Casamicciola extend along the coast northward of Casamicciola village, as far as Punta della Scrofa, with the baths of Monte della Misericordia, a long yellowish building, prominent among them. Osservatorio Geodinamico, two reddish buildings surrounded by an enclosure, stands on the summit of Gran 50 Sentinella, a hill 404 feet (123^m1) high, situated about 6 cables east-south-eastward of Lacco Ameno light-structure and overlooking the western part of Casamicciola village.

Moletto di Casamicciola (*Lat.* 40° 45' N., *Long.* 13° 55' E.) projects 262 feet (79^m9) northward from the coast about three-quarters of a mile

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449

Chart 3931.

eastward of Lacco Ameno light-structure ; a rough breakwater projects a further 262 feet (79^m9) northward from the head of the mole.

A light is exhibited, at an elevation of 30 feet (9^m1), from a red iron column on a square stone base, situated about 40 feet (12^m2) within the head of the breakwater. 5

Dangers.—Buoy.—Secca del Santuario, a small shoal with a depth of 8 feet (2^m4) over it, and depths of from 5 to 6 fathoms (9^m1 to 11^m0) around it, lies about 3½ cables north-westward of Casamicciola light-structure ; a red conical buoy, surmounted by a globe, is moored on the northern side of Secca del Santuario. The shoal is covered by the red sector of Casamicciola light bearing less than 157°, and by the red sector of Lacco Ameno light bearing more than 245°. 10

A spit, with a depth of 13 feet (4^m0) over its extremity, extends about 3 cables north-westward from a position on the coast about 3½ cables eastward of Moletto di Casamicciola. Another spit, with a depth of 16 feet (4^m9) over its extremity, extends about a quarter of a mile west-north-westward of Punta della Scrofa and about 1½ cables offshore. 15

A shoal patch, with a depth of 13 feet (4^m0), weed, over it, lies about 2½ cables northward of Punta della Scrofa ; it is covered by the red sector of Lacco Ameno light bearing more than 245°. 20

Porto d'Ischia.—Lights.—The entrance to Porto d'Ischia lies about 8½ cables east-south-eastward of Punta della Scrofa ; the harbour is an old crater on the northern side of which an entrance about 40 yards (36^m6) wide has been excavated. A curved mole extends about 1½ cables north-north-eastward from the western entrance point. Prominent landmarks are : Villa Reale, a military bathing establishment, situated in fine gardens about three-quarters of a cable southward of, and overlooking, the harbour ; the municipal warm baths, a large building at the south-eastern corner of the harbour ; and Villa Acquario, a dark-red building with a cupola, situated on a green hill about one cable eastward of the harbour entrance. 25

A light is exhibited, at an elevation of 44 feet (13^m4), from a red circular tower on a red rectangular base, 36 feet (11^m0) in height, situated on the head of the mole. 30



Molehead light-tower.

A light is exhibited, at an elevation of 15 feet (4^m6), from a red conical tower on a dark-grey base, 11 feet (3^m4) in height, situated on the western side of the harbour entrance. 35

A light is exhibited, at an elevation of 15 feet (4^m6), from a red tower on a dark-grey base, 11 feet (3^m4) in height, situated on the eastern side of the harbour entrance. 40

Harbour.—Dangers.—The harbour is sheltered from all winds, but north-easterly winds raise a sea, whilst south-westerly, west-south-westerly and northerly winds all make entrance difficult. The whole perimeter of the harbour is lined with quays, except for a small tract on the eastern side. Tondo (*Lat. 40° 45' N., Long. 13° 56' E.*), a small circular platform formed by natural rock faced with quays, lies about 82 yards (75^m0) from the south-western side of the harbour and about 1½ cables south-south-westward of the entrance. In 1949, there was a least depth of 16 feet (4^m9) in the approach, and of 17 feet (5^m2) in 45

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

the entrance, to the harbour. There were depths of from 17 to 23 feet (5^m2 to 7^m0) in the eastern part of the harbour and of from 13 to 16 feet (4^m0 to 4^m9) in the western part. There were depths of from 5 to 11 feet (1^m5 to 3^m4) alongside the quays, except at those on the northern side of the harbour where the depths were less than 6 feet (1^m8).

A rocky bank on which the depths are less than 3 fathoms (5^m5) fronts both entrance points and extends as much as 3¼ cables north-eastward of the eastern entrance point; Scogliera di San Pietro, a group of above-water rocks, lies on the inner part of this bank about one cable east-north-eastward of the eastern entrance point; at night, the light on the eastern entrance point is obscured over these rocks between the bearings of 225° and 270°. A detached 16-foot (4^m9) rocky patch lies about 3 cables eastward of the light-structure on the head of the mole.

Owing to silting, a sandbank has formed alongside the eastern side of the mole, and depths of 10 feet (3^m0) are found as much as 44 yards (40^m3) from its eastern side.

Directions.—Vessels not exceeding 230 feet (70^m1) in length and 13 feet (4^m0) in draught can enter the harbour in safety.

Vessels entering Porto d'Ischia should keep Tondo bearing about 219° and seen midway between the light-structures on the entrance points, which leads between Scogliera di San Pietro and the sandbank on the eastern side of the mole; although Tondo is low and dark, it can generally be distinguished by vessels before passing the head of the mole. In-going vessels should wait outside the molehead until out-going vessels are clear of the entrance channel.

With strong southerly winds, caution is necessary during the ebb stream as there is then usually a moderately strong current at the entrance.

Port facilities.—The principal industry is fishing and the exports of Porto d'Ischia consist almost entirely of wine. There is a military hospital of moderate size.

Small quantities of fresh provisions are available and a limited quantity of fresh water may be obtained from the tanks of Villa Reale, but transport to the harbour is laborious.

There is a patent slipway capable of taking small craft up to about 80 tons.

There is regular sea communication with Porto di Napoli.

Coast.—Anchorage.—From the entrance to Porto d'Ischia, the coast trends east-south-eastward for about 6 cables to Punta Molina, a point readily identified at the foot of an ancient lava stream. The normal anchorage for vessels too large to enter Porto d'Ischia is off this stretch of coast, in depths of from 11 to 22 fathoms (20^m1 to 40^m2), good holding ground, about 3 cables offshore; when approaching this anchorage, it should be borne in mind that the depths decrease very abruptly from about 11 fathoms (20^m1). The anchorage is untenable during northerly winds.

Ischia.—Light.—Anchorage.—The town of Ischia is situated on the eastern coast of the island, about one mile south-eastward of the entrance to Porto d'Ischia. Castello d'Ischia (*Lat.* 40° 44' N., *Long.* 13° 58' E.) is situated about a quarter of a mile eastward of the town on a circular rock, 427 feet (113^m1) high, connected with the coast by a

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

causeway with an arched bridge under which is a boat passage. Close to the castle are a church and the ruins of a cathedral and at the foot of the north-eastern side of the rock is a white pillar. The south-eastern side of the rock is steep to but a bank, with depths of less than 3 fathoms (5^m5) over it, extends about a quarter of a mile offshore northward of the causeway and about 1½ cables offshore southward of it.

Scogli di Sant' Anna, a group of above-water rocks, extends about three-quarters of a cable offshore, about a quarter of a mile southward of the causeway.

A light is exhibited, at an elevation of 269 feet (82^m0), from a grey iron framework structure, 7 feet (2^m1) in height, situated on the terrace of Castello d'Ischia (*Lat.* 40° 44' N., *Long.* 13° 58' E.).

Small craft can obtain anchorage either northward or southward of the causeway, according to the wind. On the northern side of the root of the causeway is a rectangular quay which can accommodate a few small craft; about 2 cables north-westward of the quay and about one cable offshore is a mooring buoy in a depth of 13 feet (4^m0). Small craft with local knowledge can anchor south-westward of Castello d'Ischia, about half a cable from the southern side of the rock, in depths of from 4½ to 5 fathoms (8^m2 to 9^m1); in this anchorage, locally called La Marinella, vessels can ride out strong northerly winds.

Telegraph cables.—Cable huts, painted white, mark the landing place of submarine telegraph cables close southward of Punta Molina and close southward of Scogli di Sant' Anna. Anchoring and fishing are prohibited in the vicinity of these cables.

Coast.—From Castello d'Ischia the coast trends southward for about 11 cables and then south-westward for about 9 cables to Punta San Pancrazio (page 379). This stretch of coast is steep and inaccessible and its southern part is steep to and may safely be closely approached. Within the coast, the land is very fertile and is covered with vineyards up to the edges of the cliffs. Punta del Lume, about 8 cables southward of Castello d'Ischia, may be identified by some dark, bare patches above a strata of reddish rock, below which is the entrance to a grotto.

Canale d'Ischia.—**Dangers.**—**Light-buoy.**—Canale d'Ischia is the channel between the eastern side of Isola d'Ischia and Isola di Vivara; it is 1½ miles wide at its narrowest part. Formiche di Vivara, a rocky shoal with depths of 13 feet (4^m0) over it, lies about one mile north-eastward of Castello d'Ischia; a 28-foot (8^m5) rocky patch lies about 7 cables northward, and a 36-foot (11^m0) patch lies about 4 cables south-eastward, of Formiche di Vivara.

A conical light-buoy painted red, surmounted by a framework structure and exhibiting a *red flashing light every three seconds*, is moored close westward of Formiche di Vivara.

La Catena, a bank with a least depth of 12 fathoms (21^m9) over it, lies about 1½ miles east-south-eastward of Castello d'Ischia.

Directions.—Vessels from northward should approach with Castello d'Ischia bearing 180° until Punta Socciaro, the southern extremity of Isola di Procida (page 385), bears about 094° and is just open southward of Punta Mezzodi, the southern extremity of Isola di Vivara (page 384), when course may be shaped south-eastward through the middle of the channel.

Charts 1728, 1841, 1842, 676, 1400, 2158a, 2158b, 449.

Chart 3931.

Vessels from southward should pass about 3 cables eastward of Castello d'Ischia, steering about 338° , until the light-structure on the mole at Porto d'Ischia bears 270° , when Formiche di Vivara will have 5 been passed and course may be shaped as requisite.

Currents.—Off the coast of Isola d'Ischia the currents are usually weak and follow the direction of the wind. In Canale d'Ischia they sometimes attain an appreciable rate and in fine weather in that channel they become tidal and change direction every six hours.

- 10 **Isola di Vivara.**—Isola di Vivara, situated about $1\frac{1}{2}$ miles east-north-eastward of Castello d'Ischia, is separated from Punta Ciracello (*Lat.* $40^{\circ} 45' N.$, *Long.* $14^{\circ} 00' E.$), the south-western extremity of Isola di Procida, by a narrow passage about 130 yards (118^m9) wide. The islet is 358 feet (109^m1) high, covered with bushes and surmounted 15 by an old tower. Golfo di Genito, a gulf formed between Isola di Vivara and Promontorio del Perricchio, a promontory of which Punta Ciracello is the western extremity, has depths of from 5 to 8 fathoms (9^m1 to 14^m6), except near the head, where they decrease rapidly to about $2\frac{1}{2}$ fathoms (4^m1) in the narrow passage between the islands; 20 this passage is further narrowed by two small above-water rocks close off Punta Ciracello. Golfo di Genito affords good shelter during northerly winds.

- Isola di Procida.**—Isola di Procida constitutes, with Isola di Vivara, a single municipality, which in 1941 had a population of 25 10,690. The soil is very fertile and the island is covered with vineyards, amongst which scattered dwellings may be seen. The coast chiefly consists of yellow volcanic rock and is indented by four bays which were formerly parts of volcanic craters but are not now easily recognised as such; Golfo di Genito is of similar origin. Isola di Procida 30 attains its greatest elevation of 377 feet (114^m9) at its north-eastern extremity, about 2 miles east-north-eastward of Punta Ciracello.

- Telegraph Cables.**—Cable huts, painted white, mark the landing place of submarine telegraph cables as follows:—At Punta Ciracello and Punta della Lingua, the south-western and north-eastern extrem- 35 ities, respectively, of Isola di Procida; close eastward of Punta Perricchio on the southern coast; and at the head of Cala di Sant' Antonio, on the eastern coast. Anchoring and fishing are prohibited in the vicinity of these cables.

- Western coast of the island.—Dangers.**—Punta del Fiumicello, 40 the precipitous north-western extremity of the island, is situated about $1\frac{1}{2}$ miles north-north-eastward of Punta Ciracello. Between Punta del Fiumicello and Punta della Serra, about 4 cables south-south-westward, the coast forms a bight which is divided into two coves by Punta Bove, a point projecting from about the middle of the head of 45 the bight; the southern cove, between Punta Bove and Punta della Serra, is named Cala del Pozzo Vecchio.

- A bank on which the depths are less than 3 fathoms (5^m5) fringes Punta del Fiumicello and Punta della Serra and the coast between them, extending as much as one cable offshore in places. A 37-foot 50 (11^m3) rocky patch lies about $2\frac{3}{4}$ cables north-north-westward of Punta del Fiumicello.

From Punta della Serra, the coast trends south-eastward for about 3 cables and then in a straight line for about 8 cables to Punta Ciracello, forming Insenatura di Ciraccio; the whole of this stretch is fronted by

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a bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as 1½ cables offshore in places.

Punta Perricchio, situated about 3 cables south-eastward of Punta Ciraccello, is the southern extremity of Promontorio del Perricchio on the summit of which, at an elevation of 210 feet (64^m0), stands Torre Margherita, square and in ruins. The eastern side of the promontory forms the western shore of Porticciolo della Chiaiolella, a small inlet open southward. Two moles, situated in the inner part of Porticciolo della Chiaiolella, afford shelter to small craft during south-easterly winds. From the head of this inlet, the coast trends south-eastward for about three-quarters of a mile to Punta Socciaro, the southern extremity of Isola di Procida. A black and white pillar stands on the coast about 2¾ cables west-north-westward of Punta Socciaro.

Fishing nets.—Tunny fishing nets extend about 8¾ cables west-north-westward from a position on the western coast about 3¾ cables north-eastward of Punta Ciraccello.

Prohibited anchorage.—Anchorage is prohibited off the western side of the short and sandy isthmus connecting Promontorio del Perricchio with Isola di Procida.

Northern side of the island.—Light.

—Dangers.—Punta Pioppeto (*Lat.* 40° 46' N., *Long.* 14° 01' E.), the northern extremity of Isola di Procida, lies about 3½ cables east-north-eastward of Punta del Fiumicello. A light is exhibited, at an elevation of 67 feet (20^m4), from a red square tower on an octagonal building, 43 feet (12^m1) in height, situated on Punta Pioppeto.



Punta Pioppeto light-tower.

Between Punta Pioppeto and Punta della Lingua, about one mile east-south-eastward, the northern coast of the island is fronted by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as a quarter of a mile offshore, and with depths of less than 5 fathoms (9^m1) over it, as much as 6 cables offshore. Secca di Marsiglia, the northern part of this bank, has depths of from 4 to 4¾ fathoms (7^m3 to 8^m7) over it.

Punta della Lingua, the north-eastern extremity of the island, is high and rugged; a shoal, with a depth of 16 feet (4^m9) over it, lies about one cable north-eastward of it and Scogli dello Schiavone, a group of above-water rocks, lies about half a cable eastward and south-eastward of it.

Marina di Procida. — Mole. — Light. — Quayage. — Marina di Procida or Cattolico lies stretched along the eastern part of the northern coast of the island between about 4½ cables south-eastward of Punta Pioppeto and Punta della Lingua. A mole, which projects about 2 cables north-north-eastward from the coast at the western end of Marina di Procida, affords protection to the quays lining the coast in front of the town.

A light is exhibited, at an elevation of 33 feet (10^m1), from an octagonal stone tower, surmounted by an iron framework structure, 28 feet (8^m5) in height, situated on the head of the mole.

The church of Santa Maria della Pietà, a whitish building surmounted by a cupola and with a square clock tower, stands on a quay about a quarter of a mile eastward of the root of the mole. From the

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western end of this quay a breakwater projects northward and east-north-eastward for about three-quarters of a cable, enclosing a small harbour which is further protected from eastward by a mole which
 5 extends about one cable northward from the coast about $1\frac{1}{2}$ cables eastward of the church of Santa Maria della Pietà. A wooden pier, with a depth of 7 feet (2^m1) alongside its head, projects about a quarter of a cable northward from the southern side of the small harbour.

Dredged channel.—Leading light-beacons.—Caution.—About
 10 three-quarters of a cable eastward of the root of the mole is a quay to which the mail steamers secure their sterns. A dredged channel, about 120 yards (109^m7) wide, leads up to the quay; in 1948, there were depths in the channel of 16 feet (4^m9) up to a distance of about 75 yards (68^m6) from the quay; thence, to within a few yards of the
 15 quay, 13 feet (4^m0), and alongside it, depths of 11 feet (3^m4).

On the eastern side of the inner end of the dredged channel is a turning basin about 120 by 87 yards (109^m7 by 79^m5), in which there are depths of 16 feet (4^m9) up to a distance of about 120 yards (109^m7) from the quay, decreasing to 13 feet (4^m0) about 22 yards (20^m1)
 20 from the quay.

Leading light-beacons have been established for the dredged channel. The front light is exhibited from a conical masonry pillar, painted in black and white horizontal bands, and 10 feet (3^m0) in height, situated on the northern edge of the quay; the rear light is exhibited from a
 25 wooden board, painted in black and white chequers, situated on the wall of a red building about 37 yards (33^m8) south-south-westward of the front light. These light-beacons in line, bearing about 197° , lead through the centre of the dredged channel.

The alignment of the light-beacons passes only about 100 feet
 30 (30^m5) from the submerged foundations of the mole head (*Lat.* $40^\circ 46' N.$, *Long.* $14^\circ 02' E.$), and as there are depths of more than 26 feet (7^m9) for three-quarters of a cable eastward of the mole head, vessels are advised to pass about 170 feet (51^m8) from it and to get on to the leading line immediately the light-structure on the mole head is abeam.

Anchorage.—Prohibited anchorage.—Vessels of moderate size can anchor in depths of from $3\frac{3}{4}$ to $4\frac{1}{2}$ fathoms (6^m9 to 8^m2), not less than $2\frac{1}{2}$ cables northward of the church of Santa Maria della Pietà, under the shelter of the outer part of the mole. Small vessels with local knowledge can obtain temporary anchorage in depths of about
 40 $1\frac{1}{2}$ fathoms (3^m2) northward of Santa Maria della Pietà, about one cable offshore.

Anchorage is prohibited in an area extending about 170 feet (51^m8) on either side of the alignment of the light-beacons.

Port facilities.—There is a civil hospital of small size at Marina di
 45 Procida.

Small quantities of fresh provisions can be obtained.

There are two patent slipways suitable for small craft, situated on the eastern side of the root of the mole.

There is daily sea communication with ports in Golfo di Napoli.

Eastern coast of the island.—Anchorage.—From Punta della
 50 Lingua, the coast trends south-south-westward for about half a mile to Punta dei Monaci and is high, rugged and backed by an unbroken line of houses and overlooked by an old signal station and a castle. There is a penal establishment on the southern part of this stretch of

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Chart 3931.

coast, and vessels are prohibited from approaching the coast in its vicinity within a distance of a quarter of a mile.

Punta dei Monaci is bare, rocky and dominated by a convent situated southward of the penal establishment and prominent on account of its high arched walls. 5

Between Punta dei Monaci and Punta Pizzaca, about 6 cables south-westward, the coast recedes to form Cala di Corricella and Cala di Sant' Antonio, two coves separated by a spit which, with depths of less than 2 fathoms (3^m7) over it, extends about 1½ cables offshore; the former 10 cove may be identified by the church of Santa Maria delle Grazie which stands among the houses on the eastern shore, and the latter, by the church of Sant' Antonio, situated about half a mile north-westward of Punta Pizzaca. A black and white pillar stands on Punta dei Monaci and there is a similar pillar on Punta Pizzaca. 15

A breakwater, built to protect the houses from the sea, lies parallel with, and close to, the head of Cala di Corricella, but only small boats can shelter behind it. During northerly winds, when communication with Marina di Procida is difficult, mail steamers anchor in Cala di Corricella. In Cala di Sant' Antonio, the anchorage recommended is 20 on a sandy flat, with Sant' Antonio church bearing 270° and Punta Pizzaca bearing 180°.

Insenatura del Carbonchio is entered between Punta Pizzaca and Punta Socciano, about three-quarters of a mile south-south-westward. The shores of this bight are steep-to and may be closely approached, 25 but the depths in it are too great for anchorage.

Canale di Procida. — Light. — Dangers. — Light-buoy. — Canale di Procida is the channel between Isola di Procida and the mainland; it has a least width of 1½ miles between Punta della Lingua and Punta di Fumo, but owing to the extensive banks which front 30 each side, the fairway, in which there are depths of over 5 fathoms (9^m1), is only about 2½ cables wide. Secca di Marsiglia and the dangers on the southern side of the channel are described on page 385.

Between Punta di Fumo (page 362) and Capo Miseno (*Lat.* 40° 47' N., *Long.* 14° 05' E.), about 2½ miles east-south-eastward, the northern 35 side of the channel is high for about one mile eastward of the former point, whence it abruptly decreases in elevation and becomes low and sandy abreast Lago Miseno, continuing thus to the root of the Capo Miseno promontory about 9 cables eastward. Pietre Nere, a rocky spit on which are several above-water rocks, extends about 2 cables 40 southward from near the eastern end of the high part of the coast, about three-quarters of a mile eastward of Punta di Fumo.

Capo Miseno is the southern extremity of a promontory consisting of a large yellow rocky mass, 557 feet (167^m9) high, connected with the mainland by a low sandy isthmus; the seaward side of the promontory 45 is bare, steep and rugged but the landward side is cultivated.

A light is exhibited, at an elevation of 230 feet (70^m1), from a grey metal tower, 11 feet (3^m4) in height, situated on Capo Miseno.

Approaching Capo Miseno, the white square belfry at Bacoli, about 1½ miles northward of the cape, and the large grey Castello di Baia, 50 about half a mile farther northward, will be distinguished. The convent of Camaldoli, situated on the summit of a peak, 1,503 feet (458^m1) high, about 6¼ miles north-eastward of Capo Miseno, is prominent, and can readily be identified throughout Golfo di Napoli by its elevation

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and position. It must not, however, be confused with another convent of the same name, situated at the foot of Monte Vesuvio, between Torre del Greco and Torre Annunziata (page 406).

- 5 The northern side of Canale di Procida is fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends as much as three-quarters of a mile offshore ; on it are some isolated patches with depths of from 15 to 19 feet (4^m6 to 5^m8) over them. Secca del Torri-
 10 one, a shoal with a least depth of 15 feet (4^m6) over it, lies approxi-
 mately in mid-channel, about 7½ cables southward of Punta di Fumo ; a 16-foot (4^m9) patch lies close north-westward of it, and patches with depths of 31 feet (9^m4) over them lie close westward and south-
 westward.

- A light-buoy, painted red and exhibiting a *red flashing* light, showing
 15 a flash of *one second* duration *every five seconds*, is moored on the south-
 western side of the above-mentioned dangers.

- Telegraph cables.**—A cable hut, painted white, stands on the beach close eastward of Pietre Nere and marks the landing place of
 20 three submarine telegraph cables. Anchoring and fishing are pro-
 hibited in the vicinity of these cables.

Directions.—Vessels approaching from westward should keep Capo Miseno light-structure, or at night, the light, bearing 088°, and, on nearing the light-buoy, should alter course southward and pass close southward of it.

- 25 Vessels from eastward should steer to pass close southward of the light-buoy, and when past it should keep Capo Miseno light-structure bearing 088°, astern.

- GOLFO DI POZZUOLI.**—Golfo di Pozzuoli is entered between Capo Miseno and Punta della Gaiola, about 4½ miles east-north-east-
 30 ward. Its shores are partly rocky and partly sandy and are fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends as much as 3½ cables offshore in the northern part of the gulf.

Chart 1400, plan of Golfo di Pozzuoli.

- Porto di Miseno.**—**Depths.**—**Caution.**—Porto di Miseno is a
 35 small harbour on the northern side of the Capo Miseno promontory. It is entered between Punta Terone (*Lat. 40° 47' N., Long. 14° 05' E.*), situated about 6 cables northward of Capo Miseno, and Punta di Pennata, about 2½ cables farther north-north-eastward, and it extends west-north-westward for about 6 cables to its head which is separated
 40 from Lago Miseno by a low and narrow strip of flat land through which is a canal crossed by a bridge. The Custom house, a small red one-
 storied building, stands near the southern side of the canal and is prominent, as is also a light-coloured house with a lookout tower, situ-
 45 ated on the northern side of the harbour, about 2 cables east-north-
 eastward of the Custom house. Punta Terone is 75 feet (22^m9) high,
 dark and rocky ; Punta di Pennata, also rocky, is the extremity of a long and narrow tongue of land, and the shores of the outer part of the harbour continue high and rocky as far westward as Punta Scarparella,
 50 a point surmounted by a white square pillar, situated on the southern
 shore about 3 cables north-westward of Punta Terone ; westward of Punta Scarparella, the shores of the harbour are low and sandy.

In former days, Porto di Miseno, together with Lago Miseno, formed one of the principal Roman naval stations and the remains of old

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1400, plan of Golfo di Pozzuoli.

Roman moles extend from both entrance points. The village of Miseno is situated on the southern shore of the harbour, about $1\frac{1}{2}$ cables westward of Punta Terone.

There are depths of from $4\frac{1}{4}$ to 6 fathoms (7^m8 to 11^m0) in the outer part of the harbour eastward of Punta Scarparella, but the inner part, in which there are depths of from $1\frac{3}{4}$ to $2\frac{3}{4}$ fathoms (3^m2 to 8^m0), can only be used by small vessels.

A T-shaped wooden pier with a masonry head projects about three-quarters of a cable from the head of the harbour, about 2 cables west-south-westward of Punta Scarparella; there are depths of 13 feet (4^m0) alongside its head.

Porto di Miseno suffered damage during hostilities and entry should not be attempted without local knowledge.

Dangers.—Beacon.—Buoys.—The navigable width of the entrance is reduced to about half a cable by shoals and the remains of old Roman moles. A masonry truncated conical beacon, surmounted by a vertical pipe, stands about one cable north-north-eastward of Punta Terone and marks the extremity of old Roman ruins; a can buoy, painted red and surmounted by a red cylinder, is moored about a quarter of a cable east-north-eastward of the beacon and marks the extremity of a shoal spit.

The outer ends of the remains of old Roman moles, situated respectively about half a cable south-eastward, and one cable west-south-westward, of Punta di Pennata, are each marked by a can buoy, painted black and surmounted by a black cone; a conical buoy, painted black and surmounted by a black cone, marks the southern end of similar remains about $2\frac{3}{4}$ cables west-north-westward of Punta di Pennata.

A conical buoy, painted red and surmounted by a red cylinder, is moored on the northern side of a shoal spit about half a cable northward of Punta Scarparella.

There is a pile dolphin about one cable north-westward of Punta Scarparella.

Leading marks.—Leading marks have been established north-westward of the harbour. The front mark consists of a square pillar, painted in black and white chequers, standing on the flat roof of a grey, two-storied house, situated about $2\frac{3}{4}$ cables north-westward of Punta Scarparella (*Lat.* $40^\circ 47' N.$, *Long.* $14^\circ 05' E.$); the rear mark consists of the wall of a house, painted in black and white chequers, situated about $9\frac{1}{2}$ cables west-north-westward of the front mark. These marks in line, bearing 296° , lead through the entrance to the outer part of the harbour.

Directions.—Vessels should enter with the leading marks in line, bearing 296° , which leads between the red buoy with cylindrical topmark off Punta Terone, and the two black buoys with conical topmarks off Punta di Pennata. If proceeding to the inner part of the harbour, vessels should pass between the red conical buoy with cylindrical topmark moored off Punta Scarparella, and the black conical buoy with conical topmark moored off the northern shore, and they should pass on the southern side of the pile dolphin.

Prohibited anchorage.—Merchant vessels and fishing craft are prohibited from anchoring or fishing in Porto di Miseno.

Coast.—Light.—Piers.—From Punta di Pennata the coast trends

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Chart 1400, plan of Golfo di Pozzuoli.

north-north-westward for about 6 cables to Punta Le Cento Camerelle, which is steep and rocky. Close westward of the latter point, and almost hidden by trees, is the village of Bacoli in which a church
 5 with a white square belfry and a small blue cupola is prominent. About one cable north-westward of Punta Le Cento Camerelle and about half a cable offshore are the submerged ruins of a Roman house.

Numerous villas and houses line the coast between Punta Le Cento Camerelle and Punta di Cannito, about $3\frac{1}{2}$ cables north-north-west-
 10 ward; a group of rocks, sunken and awash, extend about half a cable eastward of the latter point, and it may be identified by a whitish, one-storied house, built on a terrace supported by a wall with large arches, which stands on the point.

Castello di Baia is a large grey castle on the summit of a steep slope
 15 about 3 cables northward of Punta di Cannito. In front of the castle is Fortino Tenaglia, a white building which is connected with the coast at the foot of the castle by an arched bridge. A shoal bank extending eastward from the coast at the foot of the castle is continually becoming more shallow owing to material from local quarries
 20 being thrown into the sea, and the arches of the bridge are now nearly filled up.

A light is exhibited, at an elevation of 43 feet (13^m1), from a circular stone tower, painted in red and white horizontal bands, 23 feet (7^m0) in height, situated on Fortino Tenaglia.

25 A bank on which the depths are less than 3 fathoms (5^m5) fronts the coast between a position about $1\frac{3}{4}$ cables north-north-westward of Punta di Pennata, and Fortino Tenaglia, extending as much as one cable offshore.

Four piers project along this stretch of coast. The first pier lies
 30 between Punta di Pennata and Punta Le Cento Camerelle; the second, situated about midway between Punta Le Cento Camerelle and Punta di Cannito, lies between a house painted in red and white stripes and a white villa with a crenellated tower, has depths of $1\frac{1}{2}$ fathoms (2^m7) alongside its head, and is used for communicating with Bacoli village;
 35 and the third and fourth piers lie between Punta di Cannito and Fortino Tenaglia. There are some mooring buoys in the vicinity of the two last-mentioned piers.

Baia. — Off-lying dangers. — Beacon. — Between Fortino Tenaglia (*Lat.* $40^\circ 49' N.$, *Long.* $14^\circ 05' E.$) and Punta dell' Epitaffio,
 40 about 6 cables north-north-westward, the coast forms a bight at the head of which are the remains of the ancient Roman bathing resort of Baia. Of the magnificent ruins, some of which are submerged, the most distinctive is the Temple of Venus, an octagonal structure with eight windows and some large niches, the upper part of which is
 45 clothed with vegetation; close southward of it is a large and prominent yellow building, and a group of battlemented buildings, close to a church situated on high ground within Punta dell' Epitaffio, is also prominent. The modern village of Baia, which in 1941 had a population of about 2,000, lies at the head of the bight.

50 Secca Fumosa, a rocky patch over which there is a depth of $1\frac{1}{4}$ fathoms (2^m3), lies about half a mile eastward of Punta dell' Epitaffio; a truncated pyramidal beacon, painted in red and white vertical stripes, stands on Secca Fumosa. A $2\frac{3}{4}$ -fathom (5^m0) patch lies about three-quarters of a cable south-westward, and a $2\frac{1}{4}$ -fathom

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1400, plan of Golfo di Pozzuoli.

(4^m1) patch lies about half a cable north-westward of the beacon. Another 2 $\frac{3}{4}$ -fathom (5^m0) patch lies about 2 cables south-eastward of Punta dell' Epitaffio, and a similar patch lies about 2 $\frac{1}{2}$ cables south-south-eastward of that point.

Buoys.—Compass adjustment.—Mooring buoys are situated about one cable south-south-westward, about 4 cables south-south-eastward, about 3 $\frac{1}{2}$ cables south-eastward, and about 3 $\frac{1}{2}$ cables eastward, of Punta dell' Epitaffio.

There are five buoys to assist vessels swinging for the adjustment of 10 compasses. The following true bearings are from the centre buoy which lies about a quarter of a mile south-westward of Secca Fumosa beacon.

| | | |
|---------------------------------------|----------|----|
| Nisida light-structure | 108° 56' | |
| The column of Nisida prison | 111° 31' | 15 |
| Sant' Angelo a Tre Pizzi | 118° 11' | |
| Monte Salaro | 158° 56' | |
| Bacoli belfry | 187° 01' | |

Anchorage.—Small vessels can obtain anchorage in depths of about 4 $\frac{1}{2}$ fathoms (8^m2) about 2 $\frac{1}{2}$ cables offshore, with Secca Fumosa 20 beacon bearing about 094° and in line with the light-structure on the mole head at Pozzuoli (page 392). There is anchorage in depths of about 7 fathoms (12^m8), with the beacon on Secca Fumosa bearing 067° and distant about 3 $\frac{1}{2}$ cables from Punta dell' Epitaffio. There is also anchorage in depths of about 16 fathoms (29^m3), good holding 25 ground, with Fortino Tenaglia light-structure bearing 168°, distant about 2 $\frac{1}{2}$ cables.

Quayage.—Port facilities.—A mole extends about half a cable east-north-eastward from the coast in front of the Temple of Venus; there are depths of 10 feet (3^m0) a short distance off its head, decreasing 30 to about one foot (0^m3) at a short distance off its root.

The coast between the root of the mole and the Harbour office, about 1 $\frac{1}{2}$ cables northward, is lined by a quay. Small craft berth end-on at this quay, securing their sterns about 33 feet (10^m1) from the 35 quay where there are depths of about 10 feet (3^m0). There are two piers between the northern end of the quay and Punta dell' Epitaffio.

Oyster beds extend about 1 $\frac{1}{2}$ cables offshore between positions on the coast about one cable and 3 $\frac{1}{4}$ cables west-north-westward of Fortino Tenaglia.

Limited quantities of fresh provisions may be obtained and small 40 quantities of fresh water can be obtained from a fountain near the root of the mole.

Coast.—Dangers.—From Punta dell' Epitaffio (*Lat.* 40° 49' N., *Long.* 14° 05' E.) the coast trends in a wide curve north-eastward and eastward to the suburbs of Pozzuoli, about 2 miles east-north- 45 eastward. About 2 cables northward of Punta dell' Epitaffio the coast becomes low and sandy and there is a large white building on the beach here. There are several piers, with some small mooring buoys off them, on this stretch of coast. About half a mile north-eastward of Punta dell' Epitaffio is the entrance to a canal which drains Lago 50 Lucrino and Lago Averno, and about 6 cables farther east-north-eastward is the village of Bambinella, which consists of two large groups of buildings on the beach, behind which are the numerous villas of a modern garden city.

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1400, plan of Golfo di Pozzuoli.

Monte Nuovo, an old crater 460 feet (140^m0) high, conical and covered with vegetation, is situated about one mile north-eastward of Punta dell' Epitaffio, and about one mile farther north-eastward is the massive and rocky Monte Barbaro (chart 3931), another old crater, 1,079 feet (328^m9) high.

Secca Caruso, a rocky bank awash in places, extends about 3½ cables south-south-westward from the coast abreast the western end of Bambinella, and for about three-quarters of a mile eastward of this rocky bank the coast is fronted by rocks and shoals, which, with depths of less than 3 fathoms (5^m5) over them, extend as much as 2½ cables offshore and should be given a wide berth.

Pozzuoli.—Harbour.—Light.—The town of Pozzuoli stands on a small promontory on the north-eastern shore of the gulf of that name, about 1½ miles east-north-eastward of Fortino Tenaglia. It is surrounded by fertile country with several thermal springs and there are numerous important Roman ruins in the vicinity. The Temple of Serapide, on the northern side of the town with three columns standing, and a sulphur quarry eastward of the town, are remarkable.

The harbour is protected southward by Molo Caligoliano, a quayed mole which extends about 2 cables westward from the western extremity of the promontory on which the town is built. The inner end of the mole is connected with the town by a masonry bridge under which small craft pass to enter Darsena dei Pescatori, a small basin south-eastward of the mole which affords shelter to fishing boats; a church with a belfry stands on the southern side of the basin.

A light is exhibited, at an elevation of 38 feet (11^m6), from a white circular tower on a square stone base, 31 feet (9^m4) in height, situated on the head of Molo Caligoliano.

Pontile Ansaldo projects about 1½ cables south-south-westward from the coast about 4½ cables northward of the head of Molo Caligoliano.

Quayage.—Depths.—Caution.—The harbour suffered considerable war damage and entry should not be attempted without local knowledge. In 1949, the quayage and depths were reported as follows:—There were depths of from 2¾ to 4¾ fathoms (5^m0 to 8^m7) alongside Molo Caligoliano, except close to its root, which was shoal. The quay at the mole is normally reserved for small Italian naval vessels.

Banchina San Paolo extends about half a cable northward from the root of Molo Caligoliano; there were depths of from 2 to 5 feet (0^m6 to 1^m5) alongside this quay.

Banchina Emporio extends about a quarter of a cable northward from the northern end of Banchina San Paolo and then turns eastward for about a similar distance; there were depths of from 7 to 11 feet (2^m1 to 3^m4) alongside this quay.

Banchina Colombo and Banchina Villa extend eastward and northward in front of the public gardens for a total distance of about 1½ cables; these quays had depths alongside of from one to 5 feet (0^m3 to 1^m5).

Pontile Ansaldo (*Lat.* 40° 50' N., *Long.* 14° 07' E.) had depths of about 30 feet (9^m1) alongside its head, decreasing gradually to about 11 feet (3^m4) on either side at about 30 yards (27^m4) from its root. A rough breakwater extends about a quarter of a cable westward from near the root of Pontile Ansaldo and protects a wharf alongside which

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1400, plan of Golfo di Pozzuoli.

there are depths of from 5 to 6 feet (1^m5 to 1^m8). With southerly winds, berthing alongside Pontile Ansaldo is dangerous.

Anchorage.—Anchorage may be obtained outside the harbour; the bottom is mud and is good holding ground. A mooring buoy is situated about 4 cables westward of the head of Molo Caligoliano. 5

Winds.—A high water level indicates the probability of onshore winds and a low water level indicates fine weather or the approach of offshore squalls. In general, southerly winds raise a sea in the harbour and winds from between west and west-north-west oblige vessels to leave the quays. Berths near the inner part of the mole and at Banchina San Paolo afford the best shelter from southerly winds. 10

Town.—Port facilities.—In 1941, the population of Pozzuoli was about 22,450. The principal industry is fishing which is carried out with fixed nets along the adjacent coast, and there are also sawmills and furniture and brick factories in the town. There is a civil hospital of moderate size in the town. 15

Moderate quantities of fuel oil are normally stocked; oil may be embarked at Molo Caligoliano or alongside Pontile Ansaldo.

Fresh provisions are available and fresh water is laid on to Molo Caligoliano. 20

The Custom house and the Harbour office are situated close within Banchina San Paolo.

Coast.—Beacon.—A sandy beach begins immediately eastward of the promontory on which the town of Pozzuoli is built, and it extends eastward for about 6 cables; a beacon stands on the coast near the eastern end of this beach, about one mile eastward of the head of Molo Caligoliano. This beach is protected by a rough breakwater running parallel with, and close to, the coast. For about 8 cables eastward of the beacon the coast is rocky, with short piers for the loading of stone from local quarries projecting here and there; thence, for about half a mile farther east-south-eastward to the town of Bagnoli, it consists of a sandy beach backed by a well-cultivated plain. 30

Charts 1728, plan of Bagnoli, and 3931.

Bagnoli.—Pilotage.—The town of Bagnoli, which in 1941 had a population of about 7,000, lies stretched along the coast about 2½ miles eastward of the head of the mole at Pozzuoli. It is noted for its hot mineral springs and it has large metal and glass works. The principal imports are coal, iron and manganese ore, limestone, phosphates and scrap iron, and the principal exports are steel and iron ingots, iron plates, chemical manure, sulphate of copper and cement. 40

Prominent landmarks in the vicinity are:—Isolotto di Nisida, about one mile southward of the town, and two large piers with cranes on them, between a quarter and half a mile southward of the town.

Pilotage is compulsory and is undertaken both by day and at night by local pilots. 45

Anchorage.—There is anchorage off the beach between Bagnoli and Isolotto di Nisida as convenient; the bottom is sand and good holding ground, and the depths decrease gradually towards the beach with no dangers. There are regulations for controlling the movements of vessels in the southern part of this anchorage close to Isolotto di Nisida. For regulations covering seaplanes, see page 395. 50

Piers.—Caution.—Buoys.—Three piers extend from the coast south-south-eastward of Bagnoli. Pontile Ilva Nord (*Lat.* 40° 49' N.,

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Charts 1728, plan of Bagnoli, and 3931.

Long. 14° 10' E.), the northernmost pier, projects about $2\frac{1}{2}$ cables south-westward from the coast close southward of the town; there are depths of from 4 to $5\frac{1}{2}$ fathoms (7^m3 to 10^m1) alongside its outer 5 part which is served by cranes.

Pontile Ilva Sud projects about $2\frac{1}{2}$ cables west-south-westward from the coast about $3\frac{1}{2}$ cables south-eastward of Pontile Ilva Nord; there are depths of about 4 fathoms (7^m3) alongside its head, decreasing to about 2 fathoms (3^m7) at its root, and the pier is served by the railway 10 as well as by cranes.

Pontile Montecatini projects about $1\frac{1}{2}$ cables west-south-westward from the coast about one cable south-south-eastward of Pontile Ilva Sud; there are depths of from $2\frac{1}{2}$ to $2\frac{3}{4}$ fathoms (4^m6 to 5^m0) alongside the outer part of the pier and an overhead cable way connects the pier 15 with some grain silos.

There are four mooring buoys, moored one each side of Pontile Ilva Nord and Pontile Ilva Sud, about half a cable abreast the outer part of these piers.

It is dangerous to berth alongside any of the above-mentioned piers 20 with strong winds from south-east through south to west-north-west.

About one cable southward of Pontile Montecatini is a wooden landing place for boats which is sheltered by a rough breakwater.

Port facilities.—Some coal is normally kept in stock.

Fresh provisions can be obtained in Bagnoli and fresh water is laid 25 on to Pontile Ilva Sud. Tugs are available at the piers.

Isolotto di Nisida.—**Light.**—Isolotto di Nisida, circular in shape with rocky and inaccessible sides, and situated about half a mile south-south-westward of the head of Pontile Ilva Sud, is an ancient crater, the south-western side of which has collapsed, forming an 30 entrance to a small basin. A prison, consisting of a light-coloured circular building, stands on the north-western part of the islet.

Molo Cappellini extends about $2\frac{1}{2}$ cables east-north-eastward from the eastern side of the islet and the head of this mole is connected with the coast of the mainland, about $1\frac{1}{2}$ cables farther east-north-eastward, 35 by a breakwater; there are some mooring buoys about half a cable northward of Molo Cappellini.

An elbow mole extends about three-quarters of a cable north-north-westward from the northern side of the islet. A light is exhibited, at an elevation of 49 feet (14^m9), from a white circular tower and white 40 dwelling, 34 feet (10^m4) in height, situated on the head of the mole.

Dangers.—A spit on which the depths are less than 6 feet (1^m8) extends about half a cable northward of the head of Molo Cappellini.

A bank on which the depths are less than 3 fathoms (5^m5) fronts the north-eastern coast of Isolotto di Nisida between the root of Molo 45 Cappellini and the elbow mole, and extends as much as one cable offshore, and another bank, with depths of less than 3 fathoms (5^m5) over it, fronts the coast of the mainland close northward of the breakwater and extends as much as $2\frac{1}{2}$ cables offshore.

Anchorage.—There is anchorage in depths of about 7 fathoms 50 (12^m8), about $1\frac{1}{2}$ cables north-eastward of Isolotto di Nisida light-structure, but *see* Seaplane regulations below.

Harbour.—The harbour lies north-eastward of the islet, between Molo Cappellini and the elbow mole, and has irregular depths owing to the banks described above. Small vessels moor close to Molo Cap-

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Charts 1728, plan of Bagnoli, and 3931.

pellini, but the mooring buoys in that vicinity are generally occupied by lighters.

North-westerly and south-westerly winds raise a moderate sea in the harbour.

Porto Paone.—Porto Paone (*Lat. 40° 48' N., Long. 14° 10' E.*), a circular basin with high rocky shores, is situated on the south-western side of the islet; a rock divides the entrance into two parts. There are depths of about $5\frac{1}{2}$ fathoms (10^ml) in the entrance channel south-eastward of the rock, decreasing rapidly inside.

Caution.—The area for about half a cable off the south-western coast of Isolotto di Nisida is dangerous on account of landslips and falls of stone and also of the irregularities of the bottom. Vessels should therefore give it a wide berth.

Seaplane regulations.—When a green flag is displayed at a mast near the light-structure on Isolotto di Nisida, small vessels and floating craft are forbidden to pass through or enter the following area:—

Bounded on the south by Isolotto di Nisida, Molo Cappellini and the breakwater connecting that mole with the coast; on the west by the meridian of a point 1,039 yards (950^ml) 342° of the light-structure; on the north by a line joining the point just described and the head of Pontile Ilva Sud; and on the east by a line joining the head of Pontile Ilva Sud and a buoy, surmounted by a staff and vane, moored about $3\frac{1}{4}$ cables east-north-eastward of the light-structure, and thence running to a point on the breakwater marked by black and white stripes, and situated about $4\frac{1}{2}$ cables eastward of the light-structure.

When weather conditions are favourable for carrying out flying exercises, vessels are forbidden to anchor within the above-mentioned area, even if the green flag is not displayed.

In all cases vessels and floating craft may anchor, with or without stern fasts, within the following areas:—

Northward of Molo Cappellini, within half a cable of it, up to within half a cable of Isolotto di Nisida, but within a quarter of a cable of the mole for the remainder of it.

Within half a cable north-eastward of the outer arm of the elbow mole at Isolotto di Nisida (*Lat. 40° 48' N., Long. 14° 10' E.*).

Vessels must neither enter nor leave the above-mentioned areas while the green flag is displayed.

In urgent cases vessels may make application to the officer commanding the Air-Port for a temporary suspension of the flying exercises, when the green flag will be temporarily hauled down.

Chart 3931.

Coast.—From Punta della Badessa or di Coroglio, the point abreast Isolotto di Nisida, the coast trends south-eastward for about three-quarters of a mile to Punta della Gaiola and is high, steep and fronted by rocks which extend as much as one cable offshore. Punta Cavallo, about a quarter of a mile north-westward of the latter point, is the extremity of a long, narrow and high tongue of land which projects about $1\frac{1}{2}$ cables south-south-westward from the adjoining coast. Scogli della Gaiola are two rocks, the outer one surmounted by a villa, lying close together about half a cable eastward of Punta della Gaiola; about 3 cables north-eastward of these rocks is the church of Santa Maria del Faro which has a small cuspidated belfry.

Secca della Gaiola.—**Light-buoy.**—Secca della Gaiola is a shoal

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

bank extending about $3\frac{1}{2}$ cables south-south-eastward of Punta della Gaiola ; it is divided into two parts by a narrow passage in which there is a depth of 10 fathoms (18^m3) ; Secca La Cavallara, the southern part of the shoal, is awash in places and on the northern part are Scoglio Traverso and Scoglio Covolla.

A conical light-buoy, painted red and exhibiting a *red flashing* light showing a *short flash every three seconds*, is moored close south-westward of Secca La Cavallara.

- 10 **Coast.**—Between Punta della Gaiola (*Lat. 40° 48' N., Long. 14° 11' E.*) and Capo di Posillipo, about one mile east-north-eastward, the coast is much indented and is fronted by rocks and shoals. Scogli della Pietra Salata, a group of low, dark rocks, lies about a quarter of a mile south-south-westward of Capo di Posillipo and about $1\frac{1}{4}$ cables
15 offshore ; between the group and the coast is a rough breakwater within which small craft can shelter. The passage between the rocks and the breakwater is practicable only for boats.

- Capo di Posillipo rises very steeply from the sea and is covered with luxuriant vegetation amid which are numerous villas. On the summit
20 of the cape is an enclosure containing a war memorial consisting of a prominent greyish building in the Egyptian style, surmounted by a cupola.

- RADA DI NAPOLI.—Landmarks.**—Rada di Napoli is entered between Capo di Posillipo and Torre del Greco, about 7 miles eastward ;
25 the port and city of Napoli (Naples) lie at its head, the main entrance to the port being about $3\frac{1}{2}$ miles east-north-eastward of Capo di Posillipo.

- Approaching from westward, the following landmarks may be identified : The convent of the Camaldoli, a white building standing
30 among trees on a summit 1,598 feet (487^m1) high, about $3\frac{1}{2}$ miles northward of Capo di Posillipo ; Castel Sant' Elmo, about $2\frac{1}{4}$ miles east-south-eastward of the convent, dark, massive and standing on the summit of San Martino hill ; the white Certosa di San Martino, situated at an elevation of 869 feet (264^m9) close to Castel Sant' Elmo and a little
35 below it ; Castello or Forte dell' Ovo, situated close off the coast about $2\frac{1}{2}$ miles north-eastward of Capo di Posillipo ; an observatory with two white cupolas, situated on a hill about 2 miles northward of Castello dell' Ovo ; and two framework radio masts, standing near the main entrance to Porto di Napoli, about one mile east-north-eastward of
40 Castello dell' Ovo.

- Approaching from south-eastward, Monte Vesuvio will be seen dominating the north-eastern shore ; the Osservatorio Geodinamico, about two-thirds up the slope, and the lower station of the funicular railway a little higher up and about one mile farther east-south-
45 eastward, may be identified. On the coast, about one mile south-eastward of Torre del Greco, the dark, square Torre Bassano will be seen and the convent of Camaldoli della Torre, about one mile farther east-north-eastward, is prominent. Between Torre del Greco and Porto di Napoli, the red square belfry, surmounted by a large cross, of
50 Santa Maria di Pugliano, about $1\frac{1}{4}$ miles north-north-westward of Torre del Greco, and the prism-shaped belfry of San Giovanni a Teduccio, surmounted by a pyramidal obelisk, and situated about $2\frac{1}{4}$ miles farther north-westward, may be identified.

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

Currents.—These are chiefly influenced by the winds. With settled winds from between south-east and south-west there is a current, which enters through Bocca Piccola and runs along the coast of the southern side of the gulf, skirts the outer harbour works of Porto di Napoli, runs along the northern side of the gulf, and out through Canale di Procida. With this current the level of the sea in Porto di Napoli rises. 5

With offshore winds the current is reversed and flows out through Bocca Piccola; this current lowers the level of the sea in Porto di Napoli. 10

Both currents attain a maximum rate of about 2 knots; the former is strongest in Bocca Piccola.

Western side of Rada di Napoli.—Coast.—Light.—Anchorage.

—Between Capo di Posillipo and Porto Sannazzaro, about $1\frac{1}{2}$ miles north-north-eastward, there are several small boat harbours protected by breakwaters. Porto Sannazzaro is a small harbour frequented by pleasure craft and is largely silted up. It is protected from south-eastward by a curved mole extending about $1\frac{1}{2}$ cables from the coast in a north-easterly direction. 15 20

A light is exhibited, at an elevation of 20 feet (6^m1), from a red iron column on a stone hut, 15 feet (4^m6) in height, situated on the head of the mole (*Lat.* $40^\circ 50' N.$, *Long.* $14^\circ 13' E.$). 20

Between Porto Sannazzaro and Castello dell' Ovo, about $1\frac{1}{2}$ miles eastward, the coast sweeps in a wide curve forming Rada di Mergellina, at the head of which is Via Caracciolo, a promenade which is protected by short lengths of breakwater parallel with the coast. 25

Vessels of any size can anchor in summer in Rada di Mergellina; a suitable berth for a large vessel is in depths of about 14 fathoms (25^m8), sand, moderately good holding ground, about $2\frac{3}{4}$ cables offshore. There are two landing places along Via Caracciolo, each protected by a short breakwater, which afford communication with the shore during moderate weather. 30

Signal station.—A signal station with a flagstaff has been established in the southern part of Castello dell' Ovo. 35

Chart 1731.

Rada di Santa Lucia.—Anchorage.—From the southern extremity of Castello dell' Ovo, the coast trends north-north-eastward for about 6 cables to the root of Molo San Vincenzo; Rada di Santa Lucia lies between the extremity of Castello dell' Ovo and the head of Molo San Vincenzo. 40

Rada di Santa Lucia is the usual anchorage for men-of-war, which generally anchor in depths of from 9 to 11 fathoms (16^m5 to 20^m1), sand, and good holding ground. This anchorage is exposed to southerly winds and should be quitted on the first appearance of bad weather from that direction. 45

It should be borne in mind that numerous fishing boats are likely to be encountered in Rada di Santa Lucia, especially at night and in the early morning.

Porticciolo di Santa Lucia.—Lights.—Porticciolo di Santa Lucia is a small harbour, enclosed on its western side by a mole connecting Castello dell' Ovo with the mainland, and on its eastern side by a sunken breakwater. It consists of a rectangular basin, quayed except on the eastern side, and entered between the northern end of 50

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1731.

the breakwater and the eastern end of its northern side ; it can accommodate small vessels, principally pleasure craft. Southerly winds raise a sea in the basin.

- 5 A light is exhibited, at an elevation of 23 feet (7^m0), from an iron structure, 16 feet (4^m9) in height, situated on each side of the entrance to Porticciolo di Santa Lucia. The structure on the southern side of the entrance is painted red, and that on the northern side black.

- 10 **Porticciolo del Molosiglio.—Lights.**—Porticciolo del Molosiglio, another small quayed basin, is situated about 3 cables north-north-eastward of Porticciolo di Santa Lucia ; it is shoal, and is used mainly by small pleasure craft. Strong southerly winds raise an unpleasant sea in this basin.

- 15 A light is exhibited, at an elevation of 20 feet (6^m1), from an iron structure, 16 feet (4^m9) in height, situated on each side of the entrance to Porticciolo del Molosiglio. The structure on the southern side of the entrance is painted red, and that on the northern side black.

Chart 1596, plan of Port Torre del Greco.

- 20 **North-eastern side of Rada di Napoli.—Coast.**—Approaching Torre del Greco, the eastern entrance point of Rada di Napoli, the following landmarks may be identified : Torre Bassano (*Lat. 40° 46' N., Long. 14° 23' E.*) (page 396) ; a large mill with a conspicuous chimney, situated close to the root of the mole on the western side of Porto di Torre del Greco ; and a masonry viaduct, with several arches, situated north-eastward of the root of the mole and a little inland.

- Porto di Torre del Greco.—Depths.—Light.**—Porto di Torre del Greco, also called Porto Calastro after an ancient fort which stands on the coast close north-westward of the town, is a small harbour which is protected from westward by a slightly curved mole, quayed on its eastern side, which projects about 2½ cables southward from the coast. The entrance lies between the head of the mole and Punta Scarpetta, about 1½ cables north-eastward, but a shoal bank fronts each entrance point to a distance of about a quarter of a cable and vessels should keep in mid-channel in the entrance.

- There are depths of from 4½ to 5 fathoms (7^m8 to 9^m1) in the fairway of the entrance, decreasing regularly along the mole towards its root, and at a short distance from the quay which is fringed by a narrow shoal bank. There are depths of less than 3 fathoms (5^m5) in the north-eastern part of the harbour.

Vessels of a draught not exceeding 16 feet (4^m9) can be accommodated, but the harbour is liable to silting.

- A mooring buoy is moored near the middle of the harbour, about 1½ cables north-north-eastward of the head of the mole, and there are other mooring buoys for small craft nearer the head of the harbour. Vessels of moderate size can anchor close within the entrance and secure their sterns to the buoy in the middle of the harbour. The bottom generally is sand, but in some places there is only a layer of sand over volcanic rock and not good holding ground. Entry, usually easy by day, is dangerous with south-easterly winds. It is advisable for vessels to give previous notice of their intended arrival, in order that the central and western area of the harbour may be cleared of the small craft which usually anchor there.

A light is exhibited, at an elevation of 33 feet (10^m1), from a red iron

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1596, plan of Port Torre del Greco.

framework structure on a tank, 31 feet (9^m4) in height, situated at the head of the mole.

Pilotage.—Pilotage is optional; there is an authorised pilot at Torre del Greco. 5

Caution.—As a result of the recent hostilities there are wrecks and obstructions in the harbour and entry should not be attempted without local knowledge.

Owing to the narrow entrance to the harbour, entry and departure of merchant vessels and small craft is prohibited when vessels of the 10 Italian navy are entering or leaving.

Town. — Port facilities. — The town of Torre del Greco (*Lat. 40° 47' N., Long. 14° 22' E.*) had, in 1941, a population of about 57,700. The inhabitants are mostly fishermen, and many of them are engaged in coral fishing and diving for sponges. Landing can be 15 effected at a small masonry pier which projects about 82 feet (25^m0) from the eastern shore near the head of the harbour.

The imports are mainly cereals, and the principal export is flour. There is a civil hospital of moderate size in the town.

Fresh provisions can be obtained at Torre del Greco. 20

Repairs to small craft can be undertaken; there are four small shipyards on the eastern side of the harbour and a similar number of slipways suitable for small craft.

Vessels can be disinfected if a request is made previously.

Chart 3931. 25

Monte Vesuvio.—This mountain, about 3½ miles north-eastward of Torre del Greco, is surrounded, except towards Rada di Napoli, by the plain of Campania. The mountain has two summits, Monte Somma, on its northern side, and Monte Vesuvio proper, 3,891 feet (1,186^m0) high, about one mile southward of it, the cone of the active 30 volcano. The summits are separated by Atrio del Cavallo, a deep semi-circular valley, but on the western and south-western sides the fall is continuous though uneven. On the north-western side are a hermitage and observatory (*Lat. 40° 50' N., Long. 14° 24' E.*), and around the base of the mountain on all sides are populous villages; 35 the land is cultivated, and in places wooded.

Coast.—Danger.—From Torre del Greco, the coast trends north-westward for about 2 miles to Porto di Portici and is fringed by a rocky bank on which the depths are less than 3 fathoms (5^m5), which extends as much as 2 cables offshore. Scoglio di Scalo, an above- 40 water rock surrounded by smaller rocks, lies on this bank about 6 cables north-westward of the molehead at Torre del Greco. This stretch of coast is backed by an unbroken succession of houses amid vegetation and is dominated by the belfry of Santa Maria di Pugliano (page 396), about three-quarters of a mile inland in the town of Resina. 45

Porto di Portici. — Depths. — Buoy. — Light. — Porto di Portici is protected westward by a mole which extends about one cable west-north-westward and half a cable north-north-eastward from the coast about 2 miles north-westward of Torre del Greco; both arms of the mole are quayed on their inner side. A short breakwater extends 50 about 100 feet (30^m5) south-westward from the coast north-eastward of the head of the mole and the entrance thus formed is about half a cable wide. The north-eastern side of the harbour is fringed with a shoal bank.

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

There are depths of from $3\frac{1}{2}$ to 4 fathoms (6^m4 to 7^m3) in the fairway of the entrance but both the entrance and the harbour are liable to silt up after gales. Vessels approaching the entrance should
 5 give a berth of at least 82 feet (25^m0) to the head of the mole, and as soon as inside the entrance should turn to starboard and moor parallel with the inner arm of the mole, with bows facing the outer arm. Longer vessels moor facing the entrance with two anchors, one in the entrance channel and one under the lee of the outer arm of the mole. The
 10 bottom in the harbour is rock covered with a layer of stiff mud which is moderately good holding ground, except close to the north-eastern shore, where the bottom is rock.

A red warping buoy is moored in the inner part of the harbour.

The harbour is sheltered from all winds, but it is difficult and some-
 15 times dangerous to leave with strong south-westerly winds and the considerable sea which accompanies them. Vessels not exceeding 20 feet (6^m1) in draught can enter the harbour with safety, except during strong west-south-westerly winds.

A light is exhibited, at an elevation of 52 feet (15^m8), from an iron
 20 framework structure on a tank, painted in black and white horizontal bands and 43 feet (14^m0) in height, situated on the head of the mole (*Lat.* $40^\circ 49' N.$, *Long.* $14^\circ 20' E.$).

Caution.—Owing to the narrow entrance to the harbour, entry or departure of merchant vessels or small craft is prohibited when vessels
 25 of the Italian navy are entering or leaving.

In 1951, it was reported that, owing to recent gales, rocks and blocks of masonry from the head of the mole had been cast into the entrance channel, considerably narrowing the fairway. Passage of the entrance should not be attempted without local knowledge.

30 **Anchorage.**—Anchorage may be obtained in the roads outside the harbour, in depths of from 8 to 9 fathoms (14^m6 to 16^m5), sand, with the molehead light-structure bearing 045° , distant about $1\frac{3}{4}$ cables. This anchorage is not recommended during southerly winds, but north-westerly winds are not dangerous there.

35 **Town.**—**Port facilities.**—The town of Portici, which in 1941 had a population of 21,300, is situated about $3\frac{1}{2}$ cables north-eastward of the harbour. The principal imports are phosphates, wine and cement, and the chief exports are volcanic stone, foodstuffs, chemical fertilisers and sulphuric acid.

40 Fresh provisions can be obtained and fresh water is laid on to the mole.

Small quantities of fuel oil and motor spirit are normally stocked.

Minor repairs can be undertaken; there is a slipway capable of taking small craft only.

45 **Coast.**—**Light.**—From the entrance to Porto di Portici, the low coast trends north-westward for about 2 miles to the eastern entrance to Porto di Napoli. This stretch of coast is fronted by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends about $1\frac{3}{4}$ cables, and with depths of less than 5 fathoms (9^m1) over it, extends
 50 as much as half a mile, offshore. The buildings of the Pietrarsa foundry, situated on a small promontory about one mile north-westward of Porto di Portici, are prominent, as also is the belfry of San Giovanni a Teduccio (page 396). Several piers extend from this stretch of coast.

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

Madonna Arco Sanctuary light (chart 1728) is exhibited, at an elevation of 593 feet (180^m7), from a tower, situated about 4½ miles north-eastward of Pietrarsa foundry.

Chart 1731.

PORTO DI NAPOLI.—Porto di Napoli lies at the head of Rada di Napoli, between a point about half a mile north-north-eastward of Castello dell' Ovo and the coast about 2 miles eastward; it contains a Naval dockyard and arsenal. The city of Napoli, the principal city of southern Italy, stands at the edge of a fertile and intensely cultivated plain which extends to the foot of Monte Vesuvio. In the city, the following landmarks may be identified: The large buildings of Palazzo Reale and Maschio Angioino, situated about 6 and 7 cables, respectively, northward of Castello dell' Ovo, with the glass and iron cupola of Galleria Umberto I about 1½ cables westward of the latter building; and the spire of the church of the Carmine situated about three-quarters of a mile north-eastward of Maschio Angioino, and built in the baroque style.

Pilotage.—**Caution.**—Pilotage is compulsory. The harbour suffered considerable war damage and there are numerous wrecks and obstructions, some of which are shown on the chart. Entry should not be attempted without local knowledge.

Signal station.—There is a signal station at Castello dell' Ovo, *see* page 397.

Outer mole and breakwaters.—Porto di Napoli is protected from southerly winds by the following moles and breakwaters. Molo San Vincenzo, which extends about 8 cables east-south-eastward from a position close north-north-eastward of Porticciolo del Molosiglio; Diga Duca degli Abruzzi, a detached breakwater which extends about 2 cables east-south-eastward from close southward of the head of Molo San Vincenzo (*Lat. 40° 50' N., Long. 14° 16' E.*); Antemurale Thaon de Revel, which extends about 2½ cables north-eastward from a position about 2 cables east-north-eastward of the head of Molo San Vincenzo; Diga Foranea Emanuele Filiberto Duca d'Aosta, which extends about three-quarters of a mile east-south-eastward from the north-eastern end of Antemurale Thaon de Revel; and a short breakwater which extends about half a cable south-south-westward from the coast about 3½ cables north-north-eastward of the head of Diga Foranea Emanuele Filiberto Duca d'Aosta. The harbour, thus protected, affords good shelter and the bottom is mud and good holding ground.

Bocca di Ponente.—**Lights.**—Bocca di Ponente, the main entrance, lies between the extremities of Diga Duca degli Abruzzi and Molo San Vincenzo south-westward, and the extremity of Antemurale Thaon de Revel north-eastward, and leads into Avamporto Ammiraglio Francesco Caracciolo, which, bounded southward by Molo San Vincenzo and Antemurale Thaon de Revel, and westward and northward by numerous basins, occupies the western part of the harbour.

A light is exhibited, at an elevation of 39 feet (11^m9), from a concrete structure, painted in red and white horizontal bands, 18 feet (5^m5) in height, situated on the outer extremity of Diga Duca degli Abruzzi.

Two lights, disposed vertically, are exhibited at elevations of 28 and 21 feet (8^m5 and 6^m4) from a red iron framework structure, 21 feet

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1731.

(6^m4) in height, situated on a small spur extending northward from the head of Molo San Vincenzo.

A light is exhibited, at an elevation of 43 feet (13^m1), from a black 5 iron framework structure on a cylindrical base, 21 feet (6^m4) in height, situated on the south-western extremity of Antemurale Thaon de Revel.

Avamporto di Levante.—Lights.—Light-buoy.—The eastern entrance to Porto di Napoli is approached through Avamporto di 10 Levante, an outer basin which is entered between the south-eastern extremity of Diga Foranea Emanuele Filiberto Duca d'Aosta and the head of the short breakwater projecting from the coast about 3½ cables north-north-eastward, and it extends about 2½ cables west-north-westward.

15 A light is exhibited, at an elevation of 52 feet (15^m8), from a red framework tower on a tank, 30 feet (9^m1) in height, situated on the south-eastern extremity of Diga Foranea Emanuele Filiberto Duca d'Aosta.

A light is exhibited, at an elevation of 33 feet (10^m1), from a black 20 iron framework structure on a tank, 28 feet (8^m5) in height, situated on the head of the short breakwater on the north-eastern side of the entrance to Avamporto di Levante.

Extension works are in progress south-eastward of the head of Diga Foranea Emanuele Filiberto Duca d'Aosta; a light-buoy exhibiting 25 a red flashing light, showing a flash of one second duration every three seconds, is moored about 1½ cables south-eastward of the head of Diga Foranea Emanuele Filiberto Duca d'Aosta, and marks the outer end of the works.

Bocca di Levante.—Light.—Bocca di Levante, the eastern 30 entrance to the harbour, lies between the head of Pontile Vigliena, a jetty forming the north-western side of Avamporto di Levante, and the side of Diga Foranea Emanuele Filiberto Duca d'Aosta, about 1½ cables south-south-westward; it leads into Bacino Nuovo which, bounded south-westward by Diga Foranea Emanuele Filiberto Duca 35 d'Aosta, and north-eastward by several basins, occupies the eastern part of the harbour. Entering by Bocca di Levante is difficult with south-easterly winds.

A light is exhibited, at an elevation of 26 feet (7^m9), from a black iron structure, 16 feet (4^m9) in height, surrounded by grey iron railings, 40 situated on the south-eastern corner of Pontile Vigliena (*Lat.* 40° 50' N., *Long.* 14° 18' E.).

Basins and moles in the western part of the harbour.—
Lights.—The western part of the harbour comprises Avamporto Ammiraglio Francesco Caracciolo and Bacino Angioino, Bacino del 45 Piliero, Darsena Bacini and Darsena Armando Diaz, four basins which lie on the western and northern sides of the Avamporto.

Banchina del Molo San Vincenzo, on the southern side of the Avamporto, is reserved for Italian men-of-war. This quay is fringed by a narrow bank on which the depths are less than 5 fathoms (9^m1); 50 three mooring buoys, for the use of Italian men-of-war, are moored close northward of the eastern part of the quay.

Bacino Angioino lies between the inner part of Molo San Vincenzo and Molo Angioino, which projects from the western side of the harbour about 1½ cables north-north-eastward of the root of Molo San

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449:

Chart 1731.

Vincenzo. The civil airport, with a berthing stage for seaplanes, is normally situated at the head of Bacino Angioino. Darsena Ferdinando Acton is a small basin in which the depths are less than 4 fathoms (7^m3), situated at the south-western corner of Bacino Angioino, close northward of the root of Molo San Vincenzo; it is chiefly used by pleasure craft, and boats from Italian men-of-war. There is a graving dock on the southern side of Bacino Angioino, about $1\frac{1}{2}$ cables eastward of the root of Molo San Vincenzo, and a floating dock is moored about half a cable westward of its entrance.

Bacino del Piliero extends between Molo Angioino and Molo del Carmine which projects from the northern side of the harbour about 6 cables east-north-eastward. The basin is entered between the north-eastern corner of the head of Molo Angioino and the head of Molo Martello, which projects about $1\frac{1}{2}$ cables westward from the head of Molo del Carmine. Pontile Immacolatella Vecchia projects about half a cable south-eastward, Molo Carlo Pisacane projects about $1\frac{1}{2}$ cables south-south-eastward, and Pontile dei Silos projects about three-quarters of a cable southward, from the head of Bacino del Piliero, at distances of $1\frac{1}{2}$, $3\frac{1}{2}$ and $5\frac{1}{2}$ cables, respectively, north-eastward of the root of Molo Angioino. The sides of Bacino del Piliero and the piers and moles projecting into it, are quayed and there is normally a considerable commercial traffic in this basin, the north-eastern part of which is the most sheltered area in the port. In 1951, there were general depths of from 27 to 38 feet (8^m2 to 11^m6) in the south-western part of this basin.

A light is exhibited, at an elevation of 26 feet (7^m9), from a tower painted in black and white horizontal bands, 18 feet (5^m5) in height, situated on the head of Molo Martello.

Darsena Bacini lies between Molo del Carmine and Molo Cesario Console, about one cable eastward; there are two graving docks at the head of this basin.

Darsena Armando Diaz lies between Molo Cesario Console and Pontile Vittorio Emanuele II, about 2 cables east-south-eastward. It is entered between the works in progress off the head of Molo Cesario Console and the head of a mole which projects about half a cable westward from the south-western corner of Pontile Vittorio Emanuele II. In 1949, the work of constructing a repair basin was in progress off the head of Molo Cesario Console. The quay on the eastern side of Darsena Armando Diaz is fitted for the discharge of coal and is generally reserved for berthing colliers.

A light is exhibited, at an elevation of 23 feet (7^m0), from an iron framework tower, painted in black and white horizontal bands, 14 feet (4^m3) in height, situated on the head of the mole forming the eastern entrance point of Darsena Armando Diaz. In 1950, this light was extinguished.

A light is exhibited, at an elevation of 22 feet (6^m7), from a concrete column on a tank, 18 feet (5^m5) in height, painted in horizontal bands, black and white on its western side and red and white on its eastern side, situated at the junction of Antemurale Thaon de Revel and Diga Foranea Emanuele Filiberto Duca d'Aosta (*Lat.* $40^\circ 50' N.$, *Long.* $14^\circ 17' E.$); this light is not visible outside the harbour. In 1950, the light was extinguished.

Basins and piers in the eastern part of the harbour.—Lights.—

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1731.

The eastern part of the harbour comprises Avamporto di Levante and Bacino Nuovo, with Darsena Pollena, Darsena Granili and Darsena Vittorio Veneto, three basins lying north-eastward of, and entered
5 from, Bacino Nuovo. There are depths of more than 6 fathoms (11^m0) in the fairway of Avamporto di Levante and Bacino Nuovo, but the north-eastern part of the Avamporto is shoal and its north-western side is formed by a breakwater built against the south-eastern side of Pontile Vigliena which cannot be used for berthing vessels.

10 A light is exhibited, at an elevation of 32 feet (9^m8), from a black framework structure on a tank, 28 feet (8^m5) in height, situated on the north-eastern side of the entrance to the Avamporto, about 3 cables north-north-eastward of the head of Diga Foranea Emanuele Filiberto Duca d'Aosta (*Lat.* 40° 50' N., *Long.* 14° 18' E.).

15 A light is exhibited from the head of a short pier situated about half a cable south-eastward of the root of Pontile Vigliena.

Darsena Pollena lies between Pontile Vigliena and Pontile Giovanni Bausan, about 2½ cables west-north-westward; a floating dock is moored close to the head of the basin and the entrance to Canale
20 Pollena lies close north-westward of it. The quay on the north-western side of Pontile Vigliena is fitted for the discharge of petroleum, fuel oil and motor spirit and is reserved for berthing tankers.

Darsena Granili lies between Pontile Giovanni Bausan and Pontile della Zona Franca, about one cable west-north-westward, and Darsena
25 Vittorio Veneto lies between Pontile della Zona Franca and Pontile Vittorio Emanuele II, about 1½ cables west-north-westward. The latter basin is entered between the western corner of the head of Ponta della Zona Franca and the head of a mole projecting about half a cable eastward from the head of Pontile Vittorio Emanuele II.

30 A light is exhibited, at an elevation of 23 feet (7^m0), from a wooden post on the molehead forming the western entrance point of Darsena Vittorio Veneto. In 1950, the light was extinguished.

Chart 3931.

Compass adjustment.—A mooring buoy, for the use of vessels
35 swinging to adjust compasses, is moored about half a mile east-south-eastward of the extremity of Diga Foranea Emanuele Filiberto Duca d'Aosta; about half a mile north-westward, and a similar distance south-westward, of this buoy, are two more mooring buoys.

Chart 1731.

40 **Regulations. — Signals.** — Vessels should enter and leave the harbour by Bocca di Ponente, except vessels berthed in basins eastward of Pontile della Zona Franca which may leave by the eastern entrance.

All vessels entering or leaving must proceed at a moderate speed,
45 not exceeding 6 knots, and must keep to the starboard side of the channel.

Ashes and refuse must not be thrown overboard from vessels within the limits of the port.

The following signals shown at the head of Molo San Vincenzo
50 prohibit traffic in Bocca di Ponente:—

By day.—A black cone, point upward, between two black balls, disposed vertically.

At night.—A *white* light, between two *red* lights, disposed vertically.

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Chart 1731.

Vessels arriving must not, while either of these signals is displayed, approach within half a mile of the head of Diga Duca degli Abruzzi.

Vessels intending to leave, when either of these signals is shown, must remain at anchor, but if already under way must take all necessary precautions.

All craft including boats must, while under way at night, exhibit a white light at the bow visible all around the horizon.

The following areas are allotted for use of aircraft. The first is bounded by Molo San Vincenzo (*Lat. 40° 50' N., Long. 14° 16' E.*), a line joining the heads of Molo Angioino and Molo Martello, and Antemurale Thaon de Revel. The second, or reserve area, is along the meridian line of Darsena Armando Diaz.

When a seaplane is expected a *long* blast will be sounded on the syren on Molo San Vincenzo 5 minutes before its arrival; on the seaplane being sighted a second blast of *fifteen seconds* duration will be sounded; and when it has been taken in tow a third blast of *five seconds* duration will be sounded indicating the completion of the manœuvre.

A *long* blast will be sounded on the syren 5 minutes before the departure of a seaplane; as soon as she is ready to take off a second blast of *fifteen seconds* duration will be sounded; and when the seaplane has risen a third blast of *five seconds* duration will be sounded indicating the completion of the manœuvre.

Vessels on the point of entering or leaving the harbour must not proceed from the time the first signal is made for the arrival or departure of a seaplane, until the manœuvre is completed. Should, however, a vessel actually be in the course of entering or leaving the harbour, or shifting berth, the seaplane must delay her arrival or departure until the assigned area is clear.

Sea level.—The sea level in the harbour is mainly influenced by the wind. With southerly winds, it rises to a maximum of about one foot (0^m3) above mean level and with strong northerly winds, it falls about the same amount below mean level.

City.—Port facilities.—Radio station.—The city of Napoli, the ancient Partenope, had, in 1950, a population of 1,029,805. The principal industry is weaving and then follow, in order of importance, hemp, glassware, gold and silver artistic ware, iron work and engineering. Olives and vines abound in the adjoining fertile country; the production of hemp and tobacco is considerable and there is extensive breeding of horses, sheep and goats.

There are several hospitals and a Sailors' Home in the city.

British Consular officers reside in Napoli.

Large stocks of coal are normally maintained; coal can be embarked at the quay on the western side of Pontile Vittorio Emanuele II, or from lighters.

Large stocks of fuel oil, diesel oil and motor spirit are normally maintained; oil is usually supplied direct to vessels alongside Pontile Vigliena, but it can also be supplied in tank lighters.

Fresh provisions and supplies of all kinds are available.

Fresh water is laid on to all quays and can also be supplied by water boat. All the quays are served by the railway, and there are normally numerous cranes and several tugs, some of the latter being equipped for salvage work.

All repairs can be undertaken. There are three graving docks, two

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1731.

floating docks and a patent slipway. For dimensions of the largest dock, *see* Appendix I, page 519.

There is regular sea and air communication with all parts of the world.

There is a radio station at Napoli (*Lat.* 40° 50' N., *Long.* 14° 15' E.), *see* page 16.

Deratisation.—Deratisation can be carried out, *see* page 18.

Climatic Table.—*See* page 43.

10 *Charts 3931 and 1400, plan of Rada di Castellammare di Stabia.*

EASTERN SIDE OF GOLFO DI NAPOLI.—**Coast.**—Between the entrance to Torre del Greco (page 398) and Torre Scassata, about 3 miles south-eastward, the coast is rocky and volcanic. Torre Bassano, dark and on a square base, stands on a rocky point about 1½ miles south-eastward of Torre del Greco.

Punta della Madonna Bruna and Punta dell' Inglese, situated about 9 cables and 1½ miles, respectively, south-eastward of Torre Bassano, are fringed by rocks. A shoal, with a least depth of 7 feet (2^m1) over it, lies about one cable south-westward of Punta della Madonna Bruna, and patches, with depths of 4 and 5½ fathoms (7^m3 and 9^m6) over them, lie about 2 cables southward, and 3 cables south-south-westward, respectively, of Punta dell' Inglese.

Torre Scassata, partly in ruins, stands on a high plateau of volcanic rock about 3¼ cables east-south-eastward of Punta dell' Inglese, and is conspicuous. Eastward of this tower is a small patent slip and on its north-western side is a large stone quarry named Villa Inglese; there are two short quays for loading stone in the vicinity.

The stretch of coast between Torre del Greco and Torre Scassata is dominated by Camaldoli della Torre, a green hill, 607 feet (185^m0) high, situated about 1½ miles east-north-eastward of Torre Bassano and surmounted by a convent of the same name. The belfry of Concezione, square, with numerous openings and surmounted by a cross, standing about 8½ cables north-eastward of Punta della Madonna Bruna, and Trecase church, with a large cupola and a square, yellowish belfry surmounted by a small cupola, situated about 1½ miles north-eastward of Torre Scassata, are also prominent landmarks.

RADA DI CASTELLAMMARE DI STABIA.—Rada di Castellammare di Stabia is a wide bay entered between Torre Scassata and Capo d'Orlando, about 4½ miles south-south-eastward. The towns of Torre Annunziata and Castellammare di Stabia are situated at the north-eastern and south-eastern corners, respectively, of the bay.

Chart 1400, plan of Torre Annunziata.

Torre Annunziata.—The town of Torre Annunziata is situated on the coast about 1½ miles eastward of Torre Scassata; its principal industries are the manufacture of food pastes and medicinal products. The town is dominated by the high, grey cupola of the church of the Carmine, situated about 4½ cables northward of the harbour entrance, and another cupola, also grey but smaller, is situated about a quarter of a mile south-eastward of the church of the Carmine (*Lat.* 40° 45' N., *Long.* 14° 27' E.).

Harbour.—**Lights.**—**Buoy.**—The harbour is protected by two moles. Molo di Ponente, the western mole, extends about 3½ cables

Charts 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1400, plan of Torre Annunziata.

south-south-eastward from the coast near the north-western end of the town, and Molo di Levante, the eastern mole, extends about $1\frac{1}{2}$ cables south-westward from the coast about 3 cables east-south-eastward of the root of Molo di Ponente. The entrance between the heads of these two moles is narrowed by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as three-quarters of a cable south-westward of the head of Molo di Levante. The harbour is subject to slow silting. 5

A light is exhibited, at an elevation of 39 feet (11^m9), from a red circular tower on a red circular building, 33 feet (10^m1) in height, situated on the head of Molo di Ponente. 10

A light is exhibited, at an elevation of 33 feet (10^m1), from an iron framework structure on a stone hut, painted in black and white horizontal bands and 25 feet (7^m6) in height, situated on the head of Molo di Levante (*Lat.* $40^\circ 45' N.$, *Long.* $14^\circ 27' E.$). 15

A black conical buoy is moored about one cable southward of the light-structure on the head of Molo di Levante, and marks the edge of the bank fronting the head of that mole; vessels must pass south-westward of this buoy. 20

Pilotage.—Pilotage is compulsory for vessels of over 500 tons gross; if arriving at night, previous notice is advisable.

Quayage.—**Depths.**—The entrance to the harbour between the head of Molo di Ponente and the black conical buoy is about one cable wide with depths of from 4 to $4\frac{1}{2}$ fathoms (7^m3 to 8^m7). A small 3-fathom (5^m5) patch lies about $1\frac{1}{4}$ cables westward of the head of Molo di Levante. The inner sides of both moles are lined with quays, and Calata Crocelle, a quay lining the north-eastern side of the harbour, extends about $1\frac{1}{4}$ cables north-westward from the root of Molo di Levante. Vessels of a draught not exceeding 21 feet (6^m4) can berth alongside Molo di Levante and Calata Crocelle, where there are pontoons to keep vessels a short distance off the sides of the quays as the depths close alongside them are from $2\frac{1}{2}$ to $3\frac{1}{2}$ fathoms (4^m1 to 5^m9). Vessels of a draught not exceeding 22 feet (6^m7) berth end-on at Molo di Ponente, securing their sterns at a distance of at least 66 feet (20^m1) from the quay. Vessels berthing thus are advised to drop two anchors well apart and use plenty of cable as south-south-easterly and south-westerly winds raise a sea and the holding ground is not good. With fresh north-westerly winds, berthing at Molo di Levante is dangerous as the vessel is liable to be thrown against the quay. Three can mooring and warping buoys are moored in the harbour. 40

The entrance to the harbour can generally be used in bad weather.

Winds.—South-easterly winds cause most swell and do most damage to vessels moored at the quays. During heavy south-westerly gales, the sea often washes over Molo di Ponente. A remarkable agitation of the water in the harbour is reported to occur an hour or two before south-easterly winds set in. 45

Port facilities.—The Harbour office and Customs office are situated at the north-western end of Calata Crocelle, and the Health office is situated at the head of Molo di Levante. There is a landing place for boats abreast the Harbour office. 50

There is a large civil hospital in the town.

A moderate stock of coal is normally maintained.

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1400, plan of Torre Annunziata.

Fresh provisions are plentiful and fresh water is available at Calata Crocelle, or can be supplied by water boat.

Calata Crocelle is fitted with elevators for discharging cereals from 5 vessels, and Molo di Levante is fitted for the discharge of coal. There are numerous lighters and barges in the harbour.

Small repairs can be undertaken; there is a patent slip suitable for small craft at the north-western end of Calata Crocelle (*Lat.* 40° 45' N., *Long.* 14° 27' E.).

10 *Chart 1400, plan of Rada di Castellammare di Stabia.*

Coast.—Between Molo di Levante at Torre Annunziata and Molo Sottoflutto at Castellammare di Stabia, about 3½ miles south-south-eastward, the coast consists of a sandy beach backed by a wide and fertile plain dotted with farmhouses, and which terminates on the coast 15 in a succession of isolated factories with tall chimneys.

A wood and iron pier extends about 1½ cables south-westward from the coast at La Saliera, about three-quarters of a mile south-eastward of the entrance to Porto di Torre Annunziata. The pier is served by the railway, and vessels drawing less than 16 feet (4^m9) can berth 20 alongside it. Close within the coast at La Saliera are three conspicuous chimneys.

Fiume Sarno flows into the sea about one mile south-south-eastward of La Saliera. Scoglio di Revigliano lies about 3½ cables westward of the mouth of Fiume Sarno and about 2½ cables offshore; it is sur- 25 mounted by a ruined castle of the same name, with a large square tower, and is connected with the coast east-north-eastward of it by a shoal spit which extends about half a cable westward of the rock.

Currents.—During the night, except as affected by the tidal streams, the currents, which are mainly caused by the waters of 30 Fiume Sarno being deflected by Scoglio di Revigliano, set north-westward along the coast, and then turn westward. Between Torre Annunziata and Scoglio di Revigliano the current does not usually attain a rate of more than from one to 1½ knots, except with fresh easterly winds, when the rate is considerably increased, and the current 35 is felt more in the offing.

During the day the current, due to the sea breezes, sets eastward, overcoming the stream of Fiume Sarno and diverting it towards Castellammare di Stabia. The rate of this east-going current does not usually exceed one knot, but may be considerably increased by fresh 40 westerly or west-south-westerly winds.

Charts 1400, plans of Castellammare di Stabia and Rada di Castellammare di Stabia, 3931.

Castellammare di Stabia.—This town, which, in 1941, had a population of about 43,500, lies stretched along the coast eastward 45 of its harbour and about 3½ miles south-south-eastward of Torre Annunziata; it is an important commercial and industrial centre.

It may be identified by the following landmarks:—Monte Faito, 3,619 feet (1,103^m1) high, about 1½ miles southward of the harbour entrance; Monte Sant' Angelo a Tre Pizzi, 4,734 feet (1,442^m9) high, 50 with one of its peaks shaped like a small cupola, about 3½ miles south-south-eastward of the harbour entrance; the bare rocky summit of Monte Pendolo, 2,001 feet (609^m9) high and surmounted by a cross, about 1½ miles south-eastward of the harbour entrance and northward of the rounded summit of Monte Coppola, 1,037 feet (316^m1) high;

Charts 3931, 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Charts 1400, plans of Castellammare di Stabia and Rada di Castellammare di Stabia, 3931.

and Castello di Revigliano, mentioned above. The two peaks first-mentioned above are very prominent and easily distinguished. At the head of the harbour, some tall silos are prominent and at the western end of the town, the church and convent of Santa Maria di Pozzano with an adjacent red building, situated close within the coast at an elevation of 427 feet (130^m1), will be distinguished.

Chart 1400, plan of Castellammare di Stabia.

Pilotage.—Pilotage is compulsory; pilots are available at night as well as by day if the weather conditions outside the harbour are sufficiently calm for the small pilot boat.

Caution.—As a result of the recent hostilities the harbour is encumbered with wrecks and entry should not be attempted without local knowledge.

Harbour.—Moles and breakwaters.—Lights.—Buoys.—Porto di Castellammare di Stabia is protected from westward by Molo di Ponente, an elbow mole which extends about 2 cables north-north-eastward from the coast near the western end of the town; the outer arm of this mole is named Molo Foraneo and it is proposed to extend this arm about 200 feet (61^m0) north-north-eastward.

Molo Sottoflutto extends about half a cable north-westward from the coast about 3 cables east-south-eastward of the head of Molo Foraneo, and forms the eastern side of the harbour. A breakwater prolongs Molo Sottoflutto about a quarter of a cable north-westward and another breakwater, in two parts, extends in an east-north-easterly direction from about the middle of the north-eastern side of Molo Sottoflutto. Moletto Quartuccio (*Lat. 40° 42' N., Long. 14° 29' E.*) extends about a quarter of a cable north-north-westward from the coast about 1½ cables north-eastward of Molo Sottoflutto and is also prolonged north-westward by a short breakwater. About 1½ cables south-westward of Molo Sottoflutto, Pontile Silos extends about three-quarters of a cable north-westward from the head of the harbour.

A light is exhibited, at an elevation of 77 feet (23^m5), from a white circular tower, 38 feet (11^m6) in height, situated at the root of Molo di Ponente.

A light is exhibited, at an elevation of 30 feet (9^m1), from a stone tower on a white stone hut, 21 feet (6^m4) in height, situated on the head of Molo Foraneo.

A black conical buoy, surmounted by a black cone, is moored about half a cable north-north-eastward of the head of Molo Foraneo and marks the limit of the extension works.

A red conical buoy is moored about a quarter of a cable west-north-westward of the head of the breakwater prolonging Molo Sottoflutto.

Two mooring buoys are moored about half a cable westward, and one cable west-south-westward, respectively, of the head of Pontile Silos.

Quayage.—Depths.—Molo di Ponente, Molo Sottoflutto and the shore of the harbour between them are lined with quays, as also is the coast between Molo Sottoflutto and Moletto Quartuccio, but the depths off this latter part are shoal, and the harbour is subject to silting. There are depths of from 4 to 9 fathoms (7^m3 to 16^m5) in the entrance between the heads of Molo Foraneo and Molo Sottoflutto and the

Charts 3931, 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1400, plan of Castellammare di Stabia.

greatest depths are found in the western part of the harbour. A 3-fathom (5^m5) rocky patch lies about 1½ cables south-eastward of the head of Molo di Ponente. The bottom is stiff mud and good holding
 5 ground, except in the area between Molo Sottoflutto and the shore abreast the Harbour office, about 1½ cables south-westward, where it is rocky.

Westerly and south-westerly winds, if strong, cause a heavy sea and swell. With south-easterly winds, strong squalls come down
 10 from the mountains and render hazardous the position of vessels secured to Molo di Ponente. The area between Molo Sottoflutto and the Harbour office is much exposed to the heavy swell caused by south-westerly winds, and during the winter vessels are advised not to berth there except temporarily in fine weather.

15 With the exception of Pontile Silos, where vessels drawing less than 26 feet (7^m9) may berth alongside on either side, vessels berth end-on to the quays in the western part of the harbour. Vessels drawing less than 18 feet (5^m5) can berth end-on to Banchina Fontana and Banchina Magazzini Generale, the quays extending westward from Pontile Silos
 20 to a shipyard at the root of Molo di Ponente. Vessels whose draught exceeds 18 feet (5^m5) can be berthed end-on to Molo Foraneo and Banchina Cantiere Navalmeccanica, southward of it, where there are depths of over 23 feet (7^m0) close off the quays.

There are depths of about 20 feet (6^m1) close off the western part of
 25 Banchina Marinella, which extends between Pontile Silos and Molo Sottoflutto, but a bank on which the depths are less than 16 feet (4^m9) fronts the eastern part of this quay and the whole of Molo Sottoflutto.

Banchina del Mare Morto, the quay extending between Molo Sottoflutto
 30 and Moletto Quartuccio, has depths alongside of from one to 2 fathoms (1^m8 to 3^m7), and of 1½ to 1½ fathoms (2^m3 to 3^m2) close off it in the small area between the quay and the breakwater extending east-north-eastward from Molo Sottoflutto. Owing to silting, Moletto Quartuccio has depths alongside of from one to 3 feet (0^m3 to 0^m9) and is only
 35 available to small boats.

Anchorage.—In summer, vessels anchor in depths of from 9 to 10 fathoms (16^m5 to 18^m3), mud, and good holding ground, at a convenient distance from the head of Molo Foraneo (*Lat.* 40° 42' N., *Long.* 14° 28' E.). In the autumn, a good berth is in depths of from
 40 11 to 14 fathoms (20^m1 to 25^m6), about 2½ cables north-westward of the head of Molo Foraneo. This anchorage is untenable with strong winds between south and west-north-west.

Currents.—Winds between north-east and east-south-east cause a weak west-going current.

45 **Regulations.**—Port regulations, with which vessels must make themselves acquainted on arrival, are in force in Porto di Castellammare di Stabia. Vessels arriving or departing must proceed at a reduced speed and must pass at least one cable outside the buoy marking the extension works off the head of Molo Foraneo.

50 Vessels bound for Castellammare di Stabia from infected ports should first proceed to Napoli.

Town.—Port facilities.—The principal industries of Castellammare di Stabia are the food preserving industry and wood and metal works. The chief imports are iron, coal, timber, grain, salt, cheese,

Charts 3931, 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1400, plan of Castellammare di Stabia.

wool and marble and the principal exports are foodstuffs, potatoes, barrel staves, etc.

There is a hospital of moderate size in the town.

Small supplies of coal are normally maintained; in 1946, it was reported that, owing to the recent hostilities, no supplies of any fuel were available.

Fresh provisions are plentiful. Fresh water is laid on to Banchina Fontana, Pontile Silos and Banchina del Mare Morto.

Small repairs can be undertaken. There are grain elevators on Pontile Silos, several cranes on the quays and there are numerous lighters in the harbour.

Porto Militaire.—A mole extends about one cable northward from the coast about $3\frac{1}{4}$ cables west-south-westward of the root of Molo di Ponente; a sandy beach, which is gradually extending, has formed on the western side of the former mole. The area between this small mole and Molo di Ponente is called Porto Militaire and is used by Italian naval authorities for mooring lighters and pontoons. There are depths of from $1\frac{1}{2}$ to $3\frac{1}{2}$ fathoms (2^m7 to 6^m4) in Porto Militaire but silting is taking place alongside the small mole, and, in 1950, there were depths of from 2 to 5 feet (0^m6 to 1^m5) alongside it.

*Chart 3931.***SOUTH-EASTERN SIDE OF GOLFO DI NAPOLI.—Aspect.**

—Between Castellammare di Stabia and Punta Campanella, about 10 miles south-westward, the coast is dominated by a mountain range and is indented by several small bays fringed here and there by beaches. The following are prominent landmarks on this stretch of coast:—Monte Faito (page 408); the convent of San Francesco with a black cupola and a red belfry surmounted by a cross which is illuminated at night, standing by itself among trees at an elevation of 935 feet (285^{m0}), about $1\frac{3}{4}$ miles westward of Monte Faito and about 2 miles inland; Monte Sant' Angelo, 1,414 feet (431^{m0}) high, on which stand some ruins and a cross, about $1\frac{1}{4}$ miles south-westward of the convent and about half a mile inland; and Il Deserto, a group of reddish houses with an iron cross near them, standing at an elevation of 1,493 feet (455^{m1}) about $3\frac{1}{4}$ miles south-westward of Monte Sant' Angelo.

Coast.—Danger.—From the small mole forming the western boundary of Porto Militaire (Lat. $40^\circ 41' N.$, Long. $14^\circ 28' E.$), the coast trends west-south-westward for about $1\frac{1}{4}$ miles to Capo d'Orlando. A sandy beach named Spiaggia di Porticarello occupies the eastern half of this stretch whence the coast becomes rocky, steep and high. A cement factory stands on the western part of Spiaggia di Porticarello, and two iron piers, used for exporting cement, project from the beach in front of the factory; the larger pier is about 300 feet (91^{m4}) long, with a depth of about 32 feet (9^{m8}) alongside its head, and there are some mooring buoys close off it.

From Capo d'Orlando, the coast trends south-south-westward for about $1\frac{1}{4}$ miles to a steep plateau on which stands the village of Vico Equense. Scogli Tre Fratelli lie close off a rocky point about 4 cables south-south-westward of Capo d'Orlando, and Scoglio Scraiona lies on the edge of the coastal bank, about three-quarters of a cable northward of the rocky point; all these rocks are small and not easily distinguished from seaward. Banco di Santa Croce, with a least

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

depth of 6 fathoms (11^m0) over it and depths of about 23 fathoms (42^m1) close around it, lies about 3½ cables north-westward of the rocky point and about 3¼ cables offshore.

- 5 Lo Seraio, a prominent thermal bathing establishment, stands on the coast about 2½ cables southward of Scogli Tre Fratelli and at the foot of the hill on which is the convent of San Francesco. Scoglio Fusarella and Scoglio San Camillo lie close inshore, about 3½ and 5 cables, respectively, south-south-westward of Scogli Tre Fratelli.
- 10 **Vico Equense.—Anchorage.**—The village of Vico Equense, which in 1941 had a population of about 2,700, is situated on the steep plateau about half a mile south-westward of the convent of San Francesco. In front of the village, in which are several belfries, is a prominent yellow, crenellated castle with a wall supported by two rows of arches.
- 15 Scoglio Santa Margherita lies close off the northern extremity of the steep plateau. There is a small hospital in the village.

Marina di Vico Equense is a small bight on the north-eastern side of the plateau at the sandy head of which are a few houses. A stone pier about 65 feet (19^m8) long, with depths of 5 feet (1^m5) at its head,

20 projects from the beach at the head of Marina di Vico Equense; in 1941, work was in progress extending this pier.

Small vessels with local knowledge may obtain good anchorage sheltered from winds between north-east and south-east, about one cable north-eastward of Scoglio Santa Margherita, in depths of from

25 3¼ to 3½ fathoms (5^m9 to 6^m9); larger vessels can obtain fine weather anchorage about 2½ cables north-north-eastward of Scoglio Santa Margherita, in depths of from 6½ to 8 fathoms (11^m9 to 14^m6), sand, and moderate holding ground, but the anchorage is open to westerly and north-westerly winds.

- 30 **Coast.—Buoys.**—From Vico Equense, the coast trends west-south-westward for about three-quarters of a mile to Punta Scutolo. Rio d'Arco flows through a well-cultivated valley and enters the sea about midway along the stretch; it is crossed by a large bridge with arches about half a mile above its mouth. The sandy beach termin-
- 35 ates at Punta Scutolo and the coast thence becomes high and rocky as far as Punta Gradelle, about 4 cables south-westward. This latter point may be identified by the bright red church of Santa Maria delle Grazie, which stands at an elevation of 705 feet (214^m9), about 1½ cables east-south-eastward of the point and which has a cupola and a cus-
- 40 pidated belfry.

Marina di Equa (*Lat.* 40° 40' N., *Long.* 14° 25' E.), close westward of the mouth of Rio d'Arco, may be identified by a square tower attached to a red building; by the Hotel Seiano, which stands in the village of Seiano, about 3 cables southward of the mouth of Rio d'Arco;

45 and by Punta Gradelle. A stone pier projects about 230 feet (70^m1) from the beach abreast Marina di Equa, and is accessible to small craft on its eastern side where there are depths of about 7 feet (2^m1); the pier has a wooden extension with depths of 8 feet (2^m4) alongside its head.

- 50 Four mooring buoys, for the use of lighters loading stone from local quarries, are moored off Marina di Equa.

Meta di Sorrento. — Dangers. — Light. — Anchorage. — Meta di Sorrento, which comprises the villages of Meta Superiore, Meta Inferiore, Marina di Alimuri and Marina di Meta, lies close to

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

the coast about three-quarters of a mile south-south-eastward of Punta Grabelle, and, in 1941, had a population of about 5,000. A wide sandy beach fronts Marina di Alimuri, beginning about $3\frac{1}{2}$ cables south-eastward of Punta Grabelle and extending about a quarter of a mile southward, its southern end being separated from Marina di Meta by a rocky reef forming a breakwater and extending about three-quarters of a cable westward. From Scoglio Marisco, the outermost rock of the reef, a spit named Secca La Pila, with depths of from 2 to 7 feet (0^m6 to 2^m1) over it, extends about three-quarters of a cable westward. 5 10

A light is exhibited, at an elevation of 21 feet (6^m4), from Scoglio Marisco; in 1950, this light was extinguished.

Marina di Meta extends about $1\frac{1}{2}$ cables southward from the root of the rocky reef and is fronted by a sandy beach; it may be identified by a group of red houses with two rows of arches, situated on a hill overlooking the village. A jetty projects from the beach abreast the northern part of Marina di Meta; it is sheltered from north-westerly winds by the rocky reef and landing can be effected at it. The southern end of this beach is fronted by a shoal bank. 15 20

The church of Santa Maria del Lauro, which has a square belfry with a cupola, stands at an elevation of 364 feet (110^m9), about 6 cables east-south-eastward of Scoglio Marisco, and is a good landmark.

Vessels with local knowledge may obtain anchorage well sheltered from winds of the eastern semicircle, about 3 cables south-westward of Secca La Pila, in depths of about 9 fathoms (16^m5), or off Marina di Alimuri, in depths of from 5 to 8 fathoms (9^m1 to 14^m6). The bottom is sand and good holding ground, but it is dangerous to remain at this anchorage with winds from south-west through west and north, to north-north-east. 25 30

Currents.—With strong south-westerly and onshore winds, there is generally a north-east-going current which follows the line of the coast, becoming gradually more westerly.

Piano di Sorrento.—**Mole.**—**Light.**—**Anchorage.**—Piano di Sorrento, which consists of Cassano, Savino, Carotto and several other villages, lies between a quarter and three-quarters of a mile southward of Marina di Meta and had, in 1941, a population of about 14,000. At Marina di Cassano, the port of the district, a mole, quayed on its eastern side and sheltered by a small breakwater, projects about 230 feet (70^m1) from the coast about half a mile south-south-westward of Scoglio Marisco. There are depths of 12 feet (3^m7) alongside the head of the mole, decreasing rapidly towards the root. Small vessels berth alongside the quay and can remain there during strong south-easterly winds, but it is dangerous to do so with winds from between west-south-west and west-north-west. The mole serves a considerable traffic in herbs and walnuts, which are cultivated on a large scale in the district. 35 40 45

A light is exhibited, at an elevation of 31 feet (9^m4), from a framework structure, 26 feet (7^m9) in height, situated on the head of the mole (*Lat.* $40^\circ 38' N.$, *Long.* $14^\circ 23' E.$); in 1950, this light was extinguished. 50

Small vessels with local knowledge can obtain anchorage about one cable north-north-westward of the head of the mole, with the light-structure at Sorrento, *see* below, bearing about 242° and just open

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

northward of Punta San Francesco. The anchorage is untenable during north-westerly winds.

Currents.—Owing to the prevalent north-east-going current, the beach westward of the mole is extending, and eastward of the mole is receding.

Coast.—Punta San Francesco, high, rocky, mostly covered with pine trees and surrounded by a stone wall within which is a square, crenellated tower, is situated about half a mile westward of the mole at Marina di Cassano. Villa Crawford, situated on a rocky cliff abreast a deep cleft in the coast, may be identified by two hexagonal turrets of dark stone, the front one being surmounted by a mast.

From Punta San Francesco, the coast trends west-south-westward for about three-quarters of a mile to the mole at Sorrento and is steep and rocky, rising to a plateau; it is honeycombed with caves and intersected by zigzag paths leading from various hotels and villas to the sea, and fringed by rocks extending a short distance offshore.

Chart 1596, plan of Port Sorrento.

Sorrento.—The town of Sorrento, which, in 1941, had a population of about 9,700, stands on a high terrace in the midst of luxuriant vegetation. It may be identified by Monte di Vico Alvano (page 421), about $2\frac{3}{4}$ miles eastward of the town; by the dense pine woods close eastward of the town; and by the bright metal cupola of the church of San Francesco with an adjacent belfry, situated about one cable south-westward of the root of the mole.

Marina Piccola di Sorrento.—Mole.—Light.—The harbour, known as Marina Piccola di Sorrento, is protected from north-westward by a mole which extends about three-quarters of a cable in a north-north-easterly direction from the coast at the eastern end of the town. The mole is quayed on the inner side and can accommodate one vessel, not exceeding 200 feet (61^m0) in length and 13 feet (4^m0) in draught, alongside its outer arm, heading north-eastward if possible. Small craft can be accommodated alongside the inner part of the mole.

The harbour is completely exposed to north-easterly winds and sea, and affords no shelter when these winds are blowing strongly; at these times, access to the harbour is difficult and sometimes dangerous. With strong south-westerly winds, and generally with all strong winds between south and north-west, there is a heavy swell which puts a severe strain on moorings.

A light is exhibited, at an elevation of 28 feet (8^m5), from a black framework structure on a tank, 15 feet (4^m5) in height, situated on the head of the mole.

Anchorage.—During winter, large vessels can obtain anchorage in depths of about 22 fathoms (40^m2), good holding ground, about 2 cables westward of the head of the mole and about $1\frac{1}{2}$ cables offshore.

There are a good many winds from the southern semicircle during winter, and they are often accompanied by rain; they generally back gradually to about north-east, and when this happens, the anchorage off Sorrento must be quitted as these winds often blow hard. In such conditions, anchorage may be found off Marina di Meta.

Currents.—The currents along the coast are mostly weak and are generally west-going.

Town.—Port facilities.—Sorrento (Lat. 40° 38' N., Long. 14° 22' E.) has a mild and healthy climate, and is a popular winter tourist

Charts 3931, 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1596, plan of Port Sorrento.

resort with numerous hotels. There is a small hospital in the town.

Limited supplies of fresh provisions and of fresh water can be obtained.

There is daily sea communication with Capri, Napoli and other 5 ports in Golfo di Napoli.

Chart 3931.

Coast.—Off-lying rock.—Light.—From the root of the mole at Sorrento the coast trends west-north-westward for about $1\frac{1}{4}$ miles to Capo di Sorrento; it descends gradually in regular slopes near the 10 bottom of which are several caves. Capo di Sorrento is rocky and its extremity is surmounted by the ruins of a temple consisting of a few walls and arches; a ruined tower stands about one cable south-westward of the ruins of the temple.

Between Capo di Sorrento and Capo di Massa, about 7 cables south- 15 westward, the coast forms a bight on the southern shore of which is Marina di Puolo, consisting of a few fishermen's houses; small local sailing craft find shelter here from northerly winds in a small boat harbour between a reef of rocks and a short quay.

Capo di Massa, steep and rocky, is surmounted, at an elevation of 20 115 feet (35^m0), by the ruins of a large square tower, dark in colour; half-way up the slope behind the tower is a white building and at the summit of this slope is a disused signal station with a flagstaff.

Scoglio Vervece, a moderately high and prominent rock, lies about 9 cables south-westward of Capo di Massa and about 7 cables offshore; 25 a spit, with depths of about 28 feet (8^m5) over it, extends about half a cable eastward of the rock. There are depths of over 20 fathoms (36^m6) in the channel between the rock and the coast.

A light is exhibited, at an elevation of 50 feet (15^m2), from a red iron cross, 17 feet (5^m2) in height, situated on Scoglio Vervece.



Scoglio Vervece light-structure.

Coast.—Anchorage.—From Capo di 35 Massa, the coast trends in a wide bight to Capo Corbo, about $1\frac{1}{4}$ miles south-south-westward; Pila di Marcigliano, a group of above-water rocks, lies close inshore about 6 cables southward of Capo di Massa.

Torre San Lorenzo, white, square and connected to a wall which runs down the slope, stands on Capo Corbo (*Lat. $40^{\circ} 36' N.$, Long. $14^{\circ} 20' E.$*) and is moderately prominent from seaward. 40

The town of Massalubrense, which, in 1941, had a population of about 3,200, lies about three-quarters of a mile eastward of Capo Corbo and about half a mile inland; it may be identified by a large yellow group of houses in the town. Marina di Massalubrense is entered between the north-eastern side of Capo Corbo and Pila Piccola, the 45 extremity of a short natural breakwater about one cable north-eastward; the cove can be identified by a church with a white façade and yellow belfry, situated within its head. Pila Grande and Scoglio Trebbete, two above-water rocks, lie close north-westward and west-north-westward, respectively, of Pila Piccola. 50

There is a pier in Marina di Massalubrense and the south-western side of the cove near the head is quayed, but the rocks which fringe it render landing difficult even for boats. Entrance is dangerous during westerly or south-westerly winds.

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

Small vessels with local knowledge can obtain temporary anchorage northward of Scoglio Trebbete, in depths of from $4\frac{1}{2}$ to 5 fathoms (7^m8 to 9^m1), rock, or, if wishing to avoid anchoring, small vessels may
 5 secure a bow hawser to Scoglio Trebbete and take a stern hawser ashore under Torre San Lorenzo (*Lat.* $40^\circ 36' N.$, *Long.* $14^\circ 20' E.$).

Between Capo Corbo and Punta Campanella, about $2\frac{1}{2}$ miles southward, the coast is high, steep and mountainous and is indented by several coves which can accommodate small vessels with local
 10 knowledge.

Castello dell' Annunziata stands at an elevation of 735 feet (224^m0) on a hill amongst trees in a village of the same name, about 4 cables south-eastward of Capo Corbo ; it may be identified by a squat circular tower on which stands a square tower.

15 Punta San Lorenzo, about three-quarters of a mile south-south-westward of Capo Corbo, is a high, rocky and narrow ridge projecting westward from the adjacent coastline ; it is surmounted by a dark-coloured tower partly demolished, close northward of which is a white pillar. Insenatura di Marciano lies on the southern side of this ridge,
 20 with a village of the same name situated high up amongst trees close south-eastward of its head.

Punta Cala di Baccoli, high and massive, lies about 6 cables south-south-westward of Punta San Lorenzo and may be identified by the vertical white face of an excavation on the point ; on its southern side
 25 is Cala di Mitigliano, a cove with Scogli Pila della Cala, a group of above-water rocks, close off its south-eastern shore.

Torre Fossa, about 7 cables south-south-eastward of Punta Cala di Baccoli, is square with heavy cornices and stands about $1\frac{1}{2}$ cables inland on the slopes of Monte San Costanzo.

30 **Telegraph cables.**—Four submarine telegraph cables are landed at the head of Insenatura di Marciano, on the southern side of Punta San Lorenzo. Anchoring and fishing are prohibited in the vicinity of these cables.

Punta Campanella.—**Light.**—Punta Campanella, the south-
 35 eastern entrance point of Golfo di Napoli, is the south-western extremity of a promontory which descends gradually from the summit of Monte San Costanzo, a bare rounded peak, 1,634 feet (498^m0) high, surmounted by a small, white and prominent chapel. At the extremity of the promontory and close to the light-structure is the large square
 40 Torre di Minerva. A high brown rock of small diameter lies close off the point.

A light is exhibited, at an elevation of 132 feet (40^m2), from a grey shrine on a red, two-storied dwelling, 30 feet (9^m1) in height, situated on Punta Campanella. Distress signals are displayed from the light-
 45 structure, *see* page 11.

ISOLA DI CAPRI.—Isola di Capri is a rocky island about 3 miles long and from half a mile to $1\frac{1}{2}$ miles wide, situated with Punta del Monaco, its eastern extremity, about $2\frac{1}{4}$ miles west-south-westward of Punta Campanella ; Bocca Piccola, which separates the island
 50 from the mainland, is deep and without dangers. *See* view on chart 1728.

Monte Tiberio, 1,115 feet (339^m8) high, is situated about a quarter of a mile north-westward of Punta del Monaco. It is separated by

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

a saddle, on which is situated the town of Capri, from Monte Solaro, 1,919 feet (584^m9) high, and the highest peak in the island, situated about 2 miles westward of Punta del Monaco and about a quarter of a mile within the southern coast.

Capri produces much fruit, oil and wine. In 1941, there were about 8,000 inhabitants in the island of whom about 4,100 dwelt in the town of Capri; they are chiefly employed in agriculture, in fishing and in connection with the large foreign tourist traffic.

Chart 1842.

Exercise area.—Southward and south-westward of Isola di Capri is a rectangular area reserved for the exercises of vessels of the Italian navy. It is comprised between the parallels of Lat. 40° 21' N. and Lat. 40° 31' N., and the meridians of Long. 14° 04' E. and Long. 14° 17' E.

Chart 3931.

Western and southern sides of the island.—Between Punta di Vitareta (Lat. 40° 34' N., Long. 14° 12' E.), the north-western extremity of Isola di Capri, situated about 3 miles westward of Punta del Monaco, and Punta Carena, about 1½ miles southward, the western coast of the island is rugged, bare and precipitous; within the coast, the ground, though sloping steeply, is cultivated with vines and olives and dotted with numerous farms.

About 2¼ cables southward of Punta di Vitareta are the ruins of an old battery. Punta Cappocchia lies about 3½ cables southward of Punta di Vitareta and forms the northern entrance point of Cala del Rio; Punta di Capetiello, the southern entrance point of the cove, about 3½ cables farther southward, is surmounted by the ruins of another old battery. Punta di Pino, situated about 4 cables southward of Punta di Capetiello, is surmounted by the ruins of a third old battery. Cala di Boizzo lies between Punta di Pino and a short narrow point about 3 cables south-south-eastward.

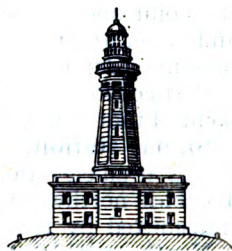
Punta Carena. — Light. — Radiobeacon.

—Punta Carena, the south-western extremity of the island, is a low and salient point, dominated by Torre della Guardia, circular and prominent, which stands at an elevation of 656 feet (199^m9), about 4 cables north-eastward of the point.

A light is exhibited, at an elevation of 240 feet (73^m1), from a red octagonal tower on a red two-storeyed dwelling, 94 feet (28^m6) in height, situated about one cable eastward of the extremity of Punta Carena.

A radiobeacon transmits from a tall iron framework structure close eastward of the light-structure.

Coast.—Anchorage.—From Punta Carena, the southern coast of the island trends eastward for about 1½ miles to Punta Ventroso and is high, steep and rocky; close south-eastward of the latter point is an isolated rock known locally as Marcellino. Close westward of Punta Ventroso are three caves which can be entered by a boat; the two western caves, which communicate with one another, are called Grotta Rossa, on account of the reddish colour of the rock. About 1½ cables westward of Punta Ventroso is a small circular basin sur-



Punta Carena light-tower.

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

rounded by high cliffs and communicating with the sea, which, owing to the colour of the rocks, is called Grotta Verde.

Sirena di Mulo is a distinctive narrow and rocky point extending 5 southward from the coast, about 6 cables north-eastward of Punta Ventroso; close within the rocky point is a group of fishermen's houses named Marina Piccola di Capri or Marina di Mulo, and on the green slopes behind them are numerous white villas. On the western side of Sirena di Mulo is a small beach protected by a line of rocks, one 10 of which is pierced by an arch. Westward of Marina Piccola di Capri, the ground rises steeply to the summit of Monte Solaro (page 417) and Monte Cappello, 1,690 feet (515^m1) high, about half a mile north-westward; on the summit of the latter mountain is a large cross and the ruins of a fort surmount Monte Solaro. The ground also rises 15 steeply eastward of Marina Piccola di Capri, and attains an elevation of 820 feet (249^m9), about 3 cables east-north-eastward of the village, where stand the ruins of a castle.

Vessels with local knowledge may obtain anchorage south-westward of Sirena di Mulo in depths of from 4½ to 5½ fathoms (7^m8 to 10^m1), 20 weed. This anchorage is used by the mail steamers from Golfo di Napoli when strong northerly winds impede communication with Marina Grande di Capri (page 419).

La Certosa (*Lat.* 40° 33' N., *Long.* 14° 15' E.), a large and prominent building, stands on the coast about half a mile east-north-eastward 25 of Sirena di Mulo and close off the coast in front of it is Scoglio Unghia Marina, a rock of the same colour as the cliffs behind it and difficult to distinguish, even from a short distance.

From abreast Scoglio Unghia Marina, the coast trends south-eastward for about 4½ cables to Punta Tragara, a steep point termin- 30 ating in a high, conical bluff, which is the south-eastern extremity of Isola di Capri. I Faraglioni, two, high, conical islets, lie close together about one cable southward of Punta Tragara, the channel between the point and the islets being deep. The southern islet is the higher and larger and resembles Punta Tragara in aspect; the northern islet 35 presents a large natural arch when seen from easterly directions.

Porticciolo di Tragara, a small cove on the northern side of the point of that name, has rocky inaccessible shores and is not frequented.

Signal station.—A signal station, consisting of a white building, stands at an elevation of 896 feet (273^m1) on the summit of a hill about 40 3 cables northward of Punta Tragara. Messages from vessels are transmitted by telegraph.

Northern side of the island.—From Punta di Vitareta (page 417), the northern coast trends eastward for about 1½ miles to the western mole at Marina Grande; it decreases in elevation and becomes less 45 steep and rocky as it proceeds eastward. The western part of this stretch is steep-to, but the eastern part is fringed by rocks and rocky shoals extending a short distance offshore.

About 1½ cables east-south-eastward of Punta di Vitareta is Torre Damecuta, circular, crenellated and standing at an elevation of 495 feet 50 (150^m9); this tower is not visible from off the western coast of the island. The famous Blue Grotto is situated about 3½ cables eastward of Punta di Vitareta and can be entered by a boat in calm weather.

Between Punta di Vitareta and Punta Sbrussa, about three-quarters of a mile eastward, the coast consists of a perpendicular rocky cliff.

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

About 7 cables eastward of the latter point are the ruins of some Roman baths and between these ruins and Punta Sbrussa are numerous caves in the rock, some at sea level. Between the ruins of the Roman baths and Marina Grande, about half a mile east-south-eastward, are 5 more ruins of Roman buildings and some detached modern villas.

Charts 1596, plan of Port Capri, and 3931.

Marina Grande di Capri.—Pilotage.—The village of Marina Grande lies stretched along the coast at the head of a small harbour and is the port of the town of Capri, situated about a quarter of a mile 10 south-eastward of it. When approaching the harbour, Marina Grande appears to be separated from the town by a green valley of woods and vineyards which is crossed by a funicular railway. Forte San Michele, situated on the summit of a hill 804 feet (245^m1) high, about 3½ cables east-south-eastward of the harbour, does not show up well as its low, 15 dark walls are the same colour as the hill.

There are no authorised pilots, but men with local knowledge are available by request.

Harbour.—Lights.—The harbour is sheltered by two moles. The north-western mole extends about one cable north-eastward and thence 20 about 1½ cables eastward from the coast abreast the village; the eastern mole extends about half a cable northward from the coast about 1½ cables eastward of the root of the north-western mole. The entrance to the harbour between the heads of the moles is 164 yards (150^m0) wide and faces eastward. 25

A light is exhibited, at an elevation of 32 feet (9^m8), from a black iron framework structure, 20 feet (6^m1) in height, situated on the head of the north-western mole (*Lat.* 40° 33' N., *Long.* 14° 15' E.).

A light is exhibited, at an elevation of 21 feet (6^m4), from a red column on a tank, 15 feet (4^m6) in height, situated on the head of the 30 eastern mole.

The inner side of the north-western mole is quayed. There is a least depth of 6½ fathoms (11^m9) alongside the outer arm, and of from three-quarters of a fathom to 3 fathoms (1^m4 to 5^m5) alongside the inner arm. Two vessels, not exceeding 325 feet (99^m1) in length and 35 23 feet (7^m0) in draught, can be berthed one alongside, and the other end-on to, the outer arm. Small craft can berth at the inner arm or off the head of the harbour and the holding ground is good. The harbour is much frequented by pleasure craft during summer and is 40 then often very congested.

The harbour is sheltered from all except south-easterly winds which raise no sea, and from squalls with strong southerly winds. North-westerly and south-westerly winds, if strong, sometimes raise a sea inside the harbour.

Telegraph cables.—Three submarine telegraph cables are landed 45 on the coast about half a cable eastward of the root of the eastern mole and a fourth cable is landed on the coast about 1½ cables westward of the north-western mole. Anchoring and fishing are prohibited in the vicinity of these cables.

Anchorage.—Anchorage may be obtained in the roads outside the 50 harbour, but there are depths of over 16 fathoms (29^m3) at a distance of about 1½ cables offshore.

A good berth during winds from the southern semicircle, and with moderate westerly winds, may be found westward of the north-western

Charts 3931, 1728, 1841, 1842, 676, 1440, 2158a, 2158b, 449.

Charts 1596, plan of Port Capri and 3931.

mole in a convenient depth and at a prudent distance offshore, with Villa Torricelli (*Lat. 40° 33' N., Long. 14° 14' E.*) in line with the summit of Monte Solaro, bearing about 222°. Villa Torricelli is a white building with a tower resembling a belfry, and is situated about one cable westward of the root of the north-western mole; it may be identified by the large flat roof, supported by white pillars, of the Hotel Bellevue, below it.

When the wind shifts northward and blows in squalls, as happens often in winter, the anchorage becomes dangerous. In these circumstances, vessels should either put to sea or take shelter in the neighbourhood of I Faraglioni (page 418). A large cleft in the rocky coast abreast these islets serves to identify this anchorage, which must be quitted as soon as the wind shifts to east-north-eastward.

15 Prohibited anchorage.—Anchorage is prohibited off the coast from $2\frac{1}{4}$ to $3\frac{1}{4}$ cables eastward, and from one to $2\frac{1}{4}$ cables westward, of the harbour.

Winds.—When Monte Solaro is covered with thin, whitish cloud, the advent of easterly winds is indicated. If the cloud increases, becoming more dense and of a dark colour, south-easterly winds may be expected. When this mountain is covered with cloud drifting in the direction of Napoli, winds from between south and south-west are indicated. If the outline of the mountain is clearly defined, winds from between north and north-west are probable.

25 Port facilities.—In 1941, the population of Marina Grande was about 800. There is a small hospital in the town of Capri.

Small quantities of fresh provisions and of fresh water are available.

There is regular sea communication with Napoli and ports in Golfo di Napoli.

30 Chart 3931.

Coast.—**Light.**—Between the entrance to the harbour at Marina Grande and Capo Tiberio, the north-eastern extremity of the island, about one mile eastward, the coast presents no distinctive features except Grotta del Bove Marina, a grotto close to Punta del Calato, about 6 cables eastward of the harbour entrance.

A light is exhibited, at an elevation of 174 feet (53^m0), from a white iron framework structure on a tank, 25 feet (7^m6) in height, situated on Capo Tiberio.

Eastern side of the island.—Between Capo Tiberio and Punta Tragara, about $1\frac{1}{4}$ miles south-south-westward, the eastern coast of the island is high, irregular, bare and of wild aspect. On the summit of Monte Tiberio (*Lat. 40° 33' N., Long. 14° 16' E.*) (page 416), and about one cable south-westward of the cape of that name, is the prominent church of Santa Maria del Soccorso, which may be identified by a bronze statue of the Virgin, standing on a high square pedestal, which glitters in the sun.

Punta del Monaco, the eastern extremity of the island, projects eastward from the adjacent coastline about a quarter of a mile southward of Capo Tiberio. About 4 cables south-westward of Punta del Monaco is Faraglione di Matromania, a small rock, close inshore, which is difficult to distinguish. Scoglio Monacone, a dark rounded rock, lies about $1\frac{1}{2}$ cables east-north-eastward of Punta Tragara and about three-quarters of a cable offshore.

A signal station, about 3 cables northward of Punta Tragara, is described on page 418.

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

CHAPTER XII

WESTERN COAST OF ITALY—PUNTA CAMPANELLA TO CAPO DELL' ARMI,
INCLUDING STRETTO DI MESSINA.

CLIMATE AND WEATHER.—*See* page 30.

Charts 3931 and 3932.

GOLFO DI SALERNO.—Golfo di Salerno is entered between Punta Campanella (*Lat.* 40° 34' N., *Long.* 14° 20' E.) and Punta 5
Licosa, about 33 miles south-eastward. The northern shore of the
gulf for about 21 miles east-north-eastward of Punta Campanella, and
the south-eastern shore for about 9 miles north-north-eastward of
Punta Licosa, are steep, rocky, difficult of access and backed by moun-
tains over 3,000 feet (914^m4) high, while the head of the gulf, between
the towns of Salerno and Agropoli, is low, sandy and intersected by 10
several rivers of which the most important is Fiume Sele.

Chart 3931.

Coast.—Aspect.—Anchorage.—For about 10 miles east-north-
eastward of Punta Campanella, the southern coast of Penisola Sor-
rentina is dominated by high mountains and the following landmarks 15
may be identified by vessels approaching from south-westward :—
The chapel on Monte San Constanzo (page 416) ; Il Deserto (page 411) ;
the church of Madonna della Neve, which stands close to several build-
ings at an elevation of 1,394 feet (424^m9), about 2½ miles north-east-
ward of Punta Campanella ; Monte Vico Alvano (page 414) ; and 20
Monte Sant' Angelo a Tre Pizzi (page 408).

Seno di Ieranto is entered between Punta Campanella and a point
about 6 cables eastward. Its shores are rocky and steep and the
depths in it are considerable, but during winds from between north-east
and north-west it affords temporary shelter to small vessels with local 25
knowledge off a small gravel beach at its head.

Scoglio Penna is a small, high and dark rock, lying about one cable
east-south-eastward of the eastern entrance point of Seno di Ieranto ;
it is surrounded by deep water.

Punta di Montalto, about 3 cables east-north-eastward of Scoglio 30
Penna, has steep and rocky sides terminating in twin peaks. Torre di
Montalto, square and partly in ruins, stands on a hill, 410 feet (125^m0)
high, about 1½ cables northward of the point.

Marina del Cantone or di Nerano, a small group of fishermen's houses
on a narrow beach about three-quarters of a mile north-eastward of 35
Punta di Montalto, is sometimes frequented by small coasting craft

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3931.

seeking shelter from northerly winds; the bottom is rocky in this anchorage.

Torre di Nerano, known locally as Mezzo All'acqua, is square and stands on a rocky hill close to the coast immediately westward of Marina del Cantone. The village of Nerano stands on the green eastern slope of an eminence about 3 cables north-north-westward of Torre di Nerano, and a prominent two-storeyed house, painted red with white windows, stands amid vegetation between them. Eastward of Marina del Cantone, the ground is covered by dense olive groves.

Punta Sant' Antonio, situated close south-eastward of Marina del Cantone and about $3\frac{1}{2}$ cables eastward of Torre di Nerano, is the south-western extremity of a high and rocky promontory on the eastern summit of which stands the square Torre di Recomone.

Torre Forca, a massive square building, stands on a bare steep slope of the same colour, about one mile east-north-eastward of Torre di Recomone. Close westward of Torre Forca is a small cove with precipitous and rocky sides, and at its head a small beach on which local fishermen haul up their boats. The village of Sant' Agata sui due Golfi is situated on the crest of the coastal range about one mile north-north-westward of this cove, and is prominent.

Scoglio d'Isca, situated close inshore about 6 cables east-north-eastward of Torre di Recomone, is rounded and covered with sparse vegetation. Although high and massive, this rock is difficult to distinguish, but a white bungalow, situated close to the sea on its north-eastern extremity, may assist in its identification.

From Torre Forca, the coast trends east-north-eastward for about $2\frac{3}{4}$ miles to Capo Scannato (*Lat.* $40^{\circ} 37' N.$, *Long.* $14^{\circ} 26' E.$); eastward of Punta Sant' Elia, a point about midway along this stretch, the coast is rocky, steep and weather-worn with numerous caves, and here and there is furrowed by torrents which flow down it.

Off-lying islets and dangers.—Light.—I Galli are three rocky islets of which Gallo Grande, the easternmost and largest, lies about $1\frac{1}{2}$ miles south-eastward of Punta Sant' Elia and is covered with shrubs; a tower stands on the summit of the islet, and on the coast south-eastward of the tower is a prominent white villa. Castelluccio, known locally as Brigante, and La Rotonda, the two other islets, lie about one cable westward, and $1\frac{1}{2}$ cables south-westward, respectively, of Gallo Grande. A rocky shoal with a depth of 16 feet (4^m9) over it, lies about $1\frac{1}{2}$ cables westward of Castelluccio.

A light is exhibited, at an elevation of 197 feet (60^m1), from a grey iron column on a masonry pillar, 16 feet (4^m9) in height, situated on the northern extremity of Gallo Grande.

Vivara or Gallo Piccolo, a moderately high and rounded islet, lies about $1\frac{1}{2}$ miles westward of Gallo Grande; a rocky bank with a least depth of 16 feet (4^m9) over it, extends about $1\frac{1}{2}$ cables westward of it. A 19-foot (5^m8) rocky patch, surrounded by deep water, lies about midway between Vivara and Gallo Grande.

The light on Punta Campanella, bearing less than 265° , is obscured over these islets and dangers.

Charts 3931 and 3932.

Coast.—Anchorage.—The district around Capo Scannato is known as Lo Scaricatore and here the coast is less steep and the Sorrento road, which is cut in the rocky slopes of Monte Vico Alvano

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Charts 3931 and 3932.

about three-quarters of a mile northward of Capo Scannato, is prominent from seaward. Between Lo Scaricatore and Punta Germano, about one mile eastward, the coast is fringed with small above-water rocks.

The ancient town of Positano, which in 1941 had a population of about 2,000, is situated about $1\frac{1}{4}$ miles east-north-eastward of Punta Germano, at the head of Insenatura di Positano. It stands at the mouth of a wide valley which opens out in the shape of an amphitheatre between the slopes of Monte Comune, 2,876 feet (876^m6), about 8 cables north-north-westward of Punta Germano, and Monte Sant' Angelo a Tre Pizzi (page 408). Positano can be readily identified as it is the only town between Punta Campanella and Capo Sottile, about 3 miles eastward of Punta Germano, where the buildings extend down to the sea. Prominent in the town are a dark square tower on a rocky spur at the western end of the beach on which the town is situated, and a church with a yellow brick cupola which overlooks the houses on the beach.

Small vessels with local knowledge can obtain anchorage on a sandy bottom, from one to $1\frac{1}{4}$ cables off Positano. This anchorage affords shelter from northerly winds but must be quitted at the first indication of fresh winds from seaward.

Small quantities of fresh provisions are available in Positano and fresh water can be obtained from a public fountain near the beach.

Chart 3932.

From Positano, the coast trends south-eastward for about $2\frac{1}{4}$ miles to Capo Sottile (*Lat.* $40^{\circ} 36' N.$, *Long.* $14^{\circ} 32' E.$) and is steep, rocky and backed by the south-western slopes of mountains sloping down to the latter point. The village of Vettica Maggiore, with its houses dotted amongst vineyards, stands on the western slopes of Monte Tre Cavalli, 3,678 feet (1,121^m0) high, about $1\frac{1}{4}$ miles northward of Capo Sottile. In the lower part of this village is a prominent church with a cupola covered in glazed tiles and having a belfry adjacent.

Capo Sottile is steep and high and is overlooked by a slender tower, partially destroyed, which stands at an elevation of 390 feet (118^m9) with a small fort in ruins at its foot. Farther inland and a little higher up the slope, is a small white circular tower with a white hut attached to it.

Scoglio Isca, a rock in the shape of a truncated cone, is 33 feet (10^m1) high and lies about a quarter of a cable southward of Capo Sottile.

The village of Praiano consists of white houses built in terraces on the green south-eastern slopes of Monte Tre Cavalli, and lies about 3 cables north-north-eastward of Capo Sottile; a square belfry may be seen amongst the houses of the village.

Between Capo Sottile and Capo di Conca, about 2 miles eastward, the coast is high and rocky; the villages of Furore, Sant' Angelo, and Penna are situated on this stretch about one mile, $1\frac{1}{4}$ miles and $1\frac{1}{2}$ miles, respectively, east-north-eastward of Capo Sottile. Capo di Conca is rocky and surmounted by a square yellowish tower which is prominent. On the summit of a peak north-westward of the cape is a large yellow building with a central red brick tower which forms an excellent landmark, being clearly visible from a considerable distance in every direction; when seen from eastward or westward, it stands out from

Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3932.

the slope of the hill behind it, on which are the scattered houses of the villages of Conca Marini, Vettica Minore and Lone. Conca Marini may be identified by its prominent yellow church which has a tall
 5 belfry, also yellow, surmounted by a small cupola, and Vettica Minore, by a square tower on a rocky point close westward of the village and about $6\frac{1}{2}$ cables north-eastward of Capo di Conca, and by a white house which stands out clearly against a clump of trees at the back of the village. A short distance eastward of Capo di Conca and about
 10 half way up the coastal slopes is a large arched cave.

Fishing nets.—Tunny nets which extend about $1\frac{1}{2}$ cables offshore from a position about half a mile north-eastward of Capo di Conca are placed each year from April to July inclusive.

Chart 1596, plan of Port Amalfi.

15 **Amalfi.**—From Capo di Conca, the coast trends north-eastward for about 2 miles to the port and town of Amalfi. The town, which in 1941 had a population of about 4,700, is situated on the coast north-eastward of the harbour and is overlooked by mountains covered in vegetation. It may be identified by the following landmarks :—Torre
 20 dello Ziro, an isolated, circular tower, with the remains of a wall close eastward of it, standing on a ridge about one cable eastward of the town and forming part of the ruined Castello di Puntone; the long arched gallery of the cemetery, situated close southward of Torre dello Ziro; the bright-green cupola of the prominent cathedral, situated
 25 amongst the many-coloured buildings in the town and lower down than Torre dello Ziro; and the white building of Hotel Cappuccini, situated in a cleft of an overhanging cliff on the coastal road about 2 cables westward of the town.

Porto di Amalfi.—**Lights.**—The harbour is protected from south-
 30 westward by a mole which extends about $1\frac{1}{2}$ cables east-south-eastward from the coast about $1\frac{1}{2}$ miles north-eastward of Capo di Conca (*Lat.* $40^{\circ} 37' N.$, *Long.* $14^{\circ} 34' E.$). A jetty, quayed on its western side, extends about a quarter of a cable southward from the coast at the south-western corner of the town, and about $1\frac{1}{2}$ cables north-north-
 35 eastward of the head of the mole. There are general depths of about $4\frac{1}{2}$ fathoms (7^m8) sand, and good holding ground, in the southern part of the harbour, but there are depths of less than 3 fathoms (5^m5) in the northern part, and of about one fathom (1^m8) alongside the quay on the western side of the jetty. It is dangerous to enter the harbour
 40 with north-easterly winds, and to remain there with south-westerly winds, which generally raise a heavy sea.

A light is exhibited, at an elevation of 39 feet (11^m9), from a red iron framework structure on a tank, 18 feet (5^m5) in height, situated on the head of the mole.

45 Two lights, disposed vertically, are exhibited, at elevations of 28 and 25 feet (8^m5 and 7^m6), from an iron post situated on the head of the jetty.

Winds.—When Capo d'Orso, *see* below, is hidden by clouds or mist, easterly winds may be expected; when Punta Licosa (page 432) is
 50 clearly visible, northerly winds are probable.

Port facilities.—There is a small civil hospital in the town.

Small quantities of fresh provisions are available.

Minor repairs to small craft can be undertaken.

There is daily sea communication with Napoli and with Salerno.

Charts 3932, 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3932.

Atrani.—Anchorage.—The village of Atrani, which in 1941 had a population of about 1,000, is separated from Amalfi by a steep, high and rocky spur, dominated by Torre dello Ziro; this spur terminates on the coast at Capo di Atrani, a high plateau surmounted by a tower and situated about 3 cables east-north-eastward of the head of the mole at Porto di Amalfi. Atrani is built in a deep defile at the mouth of Valle del Dragone. The lower part of the village is masked by a high viaduct with eight arches which crosses the narrow beach and renders the locality easy to identify; above the viaduct, the houses of the village rise in terraces on both sides of the defile. On the coast at the south-eastern end of the village and about $2\frac{1}{2}$ cables north-eastward of Capo di Atrani is the church of Santa Maria Maddelina, with a brown and white belfry and three small cupolas covered with green glazed tiles.

Vessels with local knowledge may obtain anchorage off Atrani, in depths of from 8 to 9 fathoms (14^m6 to 16^m5), about $1\frac{1}{2}$ cables offshore.

Coast.—Anchorage.—Between Capo di Atrani and Capo d'Orso, about 4 miles eastward, the coast recedes to form a bight. Between the former cape and Punta Salicerchio, about 2 miles east-north-eastward, the coast is closely backed by mountains between 3,000 and 3,300 feet (914^m4 and $1,005^m8$) high, with narrow valleys terminating in beaches between them; the valleys are extensively cultivated and are dotted with villages and fine villas.

Punta dello Scarpariello, about three-quarters of a mile north-eastward of Capo di Atrani, is surmounted by a tower and about half a mile farther north-eastward is Torre del Paradiso, which stands on the coast in front of the village of Minori. The village of Ravello, a popular tourist resort containing numerous villas, is situated amongst trees about a quarter of a mile inland between Punta dello Scarpariello and Torre del Paradiso. Good shelter from northerly winds may be obtained off this stretch of coast, named La Marmorata, on a sandy bottom with good holding ground.

Marina di Minori extends in front of the village of that name at the mouth of a valley named Reginuolo; it is overlooked by Monte Mandrino (*Lat.* $40^\circ 40' N.$, *Long.* $14^\circ 38' E.$), 1,588 feet (484^m0) high, situated about 9 cables northward of Torre del Paradiso and surmounted by a dark church with a red roof which stands among trees and is clearly visible from all directions. Another church, with a tall clocktower, stands in the village of Minori.

Vessels with local knowledge may obtain anchorage, in depths of about 6 fathoms (11^m0), from about $1\frac{1}{2}$ to $2\frac{1}{2}$ cables southward of Torre del Paradiso.

Maiori.—Anchorage.—Torre Mezzacapo, a massive square building stands on a rocky point about $3\frac{1}{2}$ cables eastward of Torre del Paradiso, and Hotel Miramare, a yellow building with a red roof and three circular towers, stands close northward of it. A sandy beach extends between Torre Mezzacapa and Punta Salicerchio, about 7 cables east-south-eastward, and close within this beach is the town of Maiori, which in 1941 had a population of about 4,000. The town stands in a natural amphitheatre at the mouth of Valle dei Tramonti and is dominated eastward by Monte Falerio, situated about $1\frac{1}{2}$ miles northward of Capo d'Orso; a church with a green-tiled cupola and a roof and belfry of a reddish colour may be seen in the town. A concrete

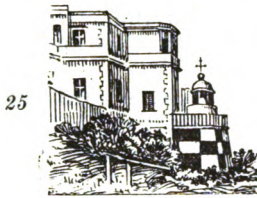
Charts 1728, 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3932.

pier, 269 feet (82^m0) long, projects from the beach abreast the town. There is daily sea communication with Salerno and Amalfi.

Vessels with local knowledge may obtain anchorage off Maiori, in depths of from 8 to 11 fathoms (14^m6 to 20^m1), good holding ground, not less than 3½ cables offshore. It is dangerous to remain at this anchorage during southerly winds.

Coast.—Light.—Between Punta Salicerchio and Capo d'Orso, about 2 miles east-south-eastward, the coast is high and dominated by Monte dell' Avvocata, 2,851 feet (869^m0) high, about 1½ miles north-north-westward of the latter cape. On the western slope of Monte dell' Avvocata and a little below the summit is a prominent convent with a red roof and a square tower. The village of Salicerchio, about 2 cables eastward of the point of that name, can be identified by a group of yellow buildings standing in terraces supported by walls. Torre Badia, a well-preserved, light-coloured tower, about three-quarters of a mile east-south-eastward of the village of Salicerchio, stands on a high cliff, and on the slopes above it and near the mouth of a large cavern are two tall white buildings. The coastal road traversing the whole of this stretch of coast is plainly visible from seaward.



Capo d'Orso lighthouse.

Capo d'Orso is a squat promontory dominated by Monte Piano, 1,280 feet (390^m1) high, about 4 cables north-westward of it.

A light is exhibited, at an elevation of 219 feet (66^m7), from a building painted in black and white chequers, 16 feet (4^m9) in height, attached to a two-storeyed red dwelling, about 4 cables westward of Capo d'Orso.

Current.—Along the coast between Capo di Atrani and Capo d'Orso, the current usually sets westward; strong southerly winds are reported to increase its rate. *Chart 1596, plan of Salerno bay.*

Coast.—Fishing nets.—Anchorage.—Torre Tummolo (Tumolo) stands in ruins on a small rocky promontory about half a mile eastward of Capo d'Orso light-structure; Torre d'Erbie (Erchie), better preserved than Torre Tummolo, also stands on a small rocky promontory about 3 cables farther north-eastward. Between these two towers is a small cove with a narrow beach on which are a few houses and a large cave.

Tunny fishing nets extend about 3¼ cables south-eastward from the coast close to Torre d'Erbie.

Cetara (Citara) (*Lat.* 40° 39' N., *Long.* 14° 42' E.), a village, which in 1941 had a population of about 2,500, is built at the entrance to a deep ravine about 6 cables north-north-eastward of Torre d'Erbie. It may be identified by a square tower on which is a two-storeyed building and by a church with a cupola and belfry.

Punta di Fuente, about 1½ miles north-north-eastward of Torre d'Erbie, is bare and rocky. About 4 cables farther north-north-eastward is Punta d'Albori (d'Arbore), which can be identified by a tower with a square base standing on a high rocky slope about half a cable west-north-westward of the point; this tower is surmounted by a crenellated building with three large arches and a sloping roof.

The village of Raito is situated on the summit of a conical hill about a quarter of a mile northward of Punta d'Albori and its white houses

Charts 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1596, plan of Salerno bay.

may be seen amongst the olives which cover the hill. The village of Albori (Arbore), about a quarter of a mile farther north-westward, is also visible from seaward.

About $1\frac{1}{2}$ cables northward of Punta di Fuente is a small cove with depths of $2\frac{3}{4}$ fathoms (5^m0) close to its head. Small vessels with local knowledge can obtain anchorage in this cove, dropping two bow anchors and securing the stern to the shore of the cove, heading eastward. Vessels thus moored can ride out bad weather.

Vietri sul Mare.—Anchorage.—The town of Vietri sul Mare, 10 which in 1941 had a population of about 12,000, is situated close within the coast about three-quarters of a mile north-eastward of Punta d'Albori and at the foot of Monte Santa Liberatore, 1,516 feet (462^m1) high. Scogli Due Fratelli, a group of above-water rocks, lies close off the coast about 6 cables east-north-eastward of Punta d'Albori, and 15 the houses of Marina di Vietri lie stretched along the steep and rocky coast between the latter point and these rocks. A prominent white square tower, with a tall square belfry behind it, rises from among the buildings of Marina di Vietri close westward of the mouth of the Bonea, a swift flowing river which enters the sea about 3 cables west- 20 ward of Scogli Due Fratelli. Torre Crestarella, white and surmounted by a building with three arches and a red roof, stands on a narrow rocky point about 2 cables north-eastward of Scogli Due Fratelli.

There is anchorage off Punta d'Albori, in depths of about 6 fathoms (11^m0), sand, with Torre d'Albori bearing 296° and the south-eastern 25 extremity of a ruined castle near Salerno, *see* below, bearing about 049° and just open south-eastward of Torre Crestarella.

Chart 1596, plan of Port Salerno and plan of Salerno bay.

Salerno.—The town of Salerno, which in 1941 had a population of about 67,500, is situated about one mile east-north-eastward of Vietri 30 sul Mare and covers the shore at the head of Porto di Salerno and the slopes of a hill close within it. On the crest of a hill overlooking the town and about $1\frac{1}{2}$ miles north-eastward of Torre Crestarella is a prominent castle in ruins. The high peak of Monte Santa Liberatore, *see* above, seen from south-eastward, presents a distinctive profile and 35 there is a white building on the eastern side of its summit. Palazzo Oliviere, a tall yellow building with a tower, situated on the coast westward of the town and about $6\frac{1}{2}$ cables north-eastward of Torre Crestarella, is prominent as also is a group of bright-red buildings, situated on the beach a short distance eastward of the town. 40

Chart 1596, plan of Port Salerno.

Pilotage.—Pilotage is compulsory. In ordinary weather, pilots meet vessels outside the harbour. The signal for a pilot by day or at night is three long blasts on the whistle or siren.

Porto di Salerno.—Moles.—Depths.—The harbour is protected 45 south-westward by a mole with a double elbow; the inner arm, which extends about $2\frac{1}{2}$ cables south-south-eastward from the coast at the western end of the town (*Lat.* $40^\circ 41' N.$, *Long.* $14^\circ 45' E.$) and about 8 cables north-eastward of Torre Crestarella, is called Molo di Ponente; the middle arm, which extends about 2 cables east-north-eastward, is called Vecchio Antemurale; and the outer arm, which extends about 1 $\frac{1}{2}$ cables south-eastward, is called Molo Foraneo. The whole of the inner side of the mole is quayed and there is a high protecting wall on the outer side. For about 800 feet (243^m8) from the root of Molo

Charts 3932, 1842, 676, 1440, 2158a, 2158b, 449.

Q

Chart 1596, plan of Port Salerno.

di Ponente, the quay has been widened and is named Banchina di Ponente.

A statue of the Madonna, painted white and 13 feet (4^m0) in height, stands about 55 yards (50^m3) within the head of Molo Foraneo; the statue is illuminated at night.

Molo di Ponente and Vecchio Antemurale form the western and southern sides, respectively, of an inner basin, the eastern side of which is formed by Banchina Manfredi, a quay which forms the western side of an area of reclaimed land and which extends south-south-eastward to within about three-quarters of a cable of the outer end of Vecchio Antemurale.

Two detached moles lie close offshore and parallel with an esplanade which fronts the eastern part of the town north-eastward of Molo Foraneo, and a short mole extends about one cable south-westward from the coast close eastward of the esplanade and about 7 cables east-north-eastward of the head of Molo Foraneo.

The harbour is subject to silting, and constant dredging is necessary to maintain a depth of 23 feet (7^m0) in a channel with a least width of 200 feet (61^m0) abreast the junction of Vecchio Antemurale and Molo Foraneo, and depths of from 23 to 26 feet (7^m0 to 7^m9) in the southern part of the inner basin. Secca Manfredi, a bank on which the depths are less than 16 feet (4^m9), fronts the northern side of the outer harbour and extends in places to the northern side of the dredged entrance channel.

In 1949, there was a depth of about 26 feet (7^m9) over a width of about 350 feet (106^m7) in the approaches, and of from 23 to 25 feet (7^m0 to 7^m6) in the entrance, to the harbour; at this date, vessels not exceeding 460 feet (140^m2) in length and 23 feet (7^m0) in draught, could safely enter the harbour. There were depths of about 20 feet (6^m1) alongside Banchina Manfredi.

In 1951, it was reported that, owing to silting, the depths in the harbour and entrance channel were less than charted and the port was only available to vessels of a draught not exceeding 20 feet (6^m1). Dredging in the harbour and entrance channel was in progress.

Along parts of Molo di Ponente, Vecchio Antemurale and Molo Foraneo, the quay foot extends some distance outward.

Lights.—Light-buoy.—A light, known as Salerno light, is exhibited, at an elevation of 49 feet (14^m9), from a circular tower, painted in red and white horizontal bands on an octagonal hut, 26 feet (7^m9) in height, situated at the junction of Vecchio Antemurale and Molo Foraneo.

A light is exhibited, at an elevation of 30 feet (9^m1), from a red iron framework structure, on a tank, 25 feet (7^m6) in height, situated about 100 feet (30^m5) within the head of Molo Foraneo.

A light is exhibited, at an elevation of 18 feet (5^m5), from an iron structure, 16 feet (4^m9) in height, situated on a spur on the northern side of the junction of Vecchio Antemurale and Molo Foraneo.

A light is exhibited, at an elevation of 20 feet (6^m1), from a white square masonry hut, 15 feet (4^m6) in height, situated on the south-western corner of Banchina Manfredi (Lat. 40° 40' N., Long. 14° 45' E.).

A cylindrical light-buoy, painted black and exhibiting a *green flashing* light showing a *short flash every three seconds*, is moored on the south-

Charts 1842, 676, 1440, 2158a, 2158b, 449.

Chart 1596, plan of Port Salerno.

western edge of Secca Manfredi, about half a cable north-eastward of Salerno light-structure, and marks the north-eastern side of the dredged channel.

Buoys.—A mooring buoy is moored near the head of the inner basin, about $1\frac{1}{2}$ cables west-north-westward of the southern end of Banchina Manfredi, and a warping buoy is moored a short distance north-eastward of it.

Storm signals.—Storm warning signals are displayed from a mast on the roof of the Port office, situated on Banchina Manfredi.

Caution.—Porto di Salerno suffered extensive war damage and entry should not be attempted without local knowledge.

Works are in progress for enlarging Porto di Salerno and protecting it from silting. These works include the extension of Molo Foraneo, the construction of a new mole protecting the eastern side of the harbour, and the construction of a quay on the northern side of the harbour between the root of Banchina di Ponente and the mole under construction. In 1950, about 600 feet (182^m9) of the northern end of the new mole had been completed.

Directions.—In ordinary weather, entrance to Porto di Salerno presents no difficulty. When vessels are entering harbour, the dredger will leave a clear channel for them and will haul down the two balls which she displays while dredging.

With moderate to fresh south-westerly winds vessels may enter the harbour provided they hug the Molo Foraneo side of the channel and avoid being set towards Secca Manfredi; it is necessary to keep good steering way. With the approach of strong southerly or south-westerly winds, the water level in the harbour is raised and the quays are liable to be inundated; with a change of wind, the level falls quickly causing strong currents which make entry dangerous.

With strong south-westerly winds entry should not be attempted; in these circumstances, vessels are recommended to anchor off Vietri sul Mare (page 427) and await better weather.

Winds.—Northerly winds, which blow down from the mountains in violent squalls, strain the moorings of the vessels in the harbour.

Southerly and south-westerly winds cause a surf and impose a heavy strain on the moorings of vessels in the harbour.

When Capo d'Orso is obscured by cloud, winds from between south-east and south may be expected. Squalls from northward or north-eastward are usually preceded by the formation of sheets of cloud on the mountains above Agropoli (page 430).

Currents.—With south-westerly winds the current follows the coastline, setting northward along Banchina Manfredi, and running out south-eastward along Molo di Ponente (*Lat.* 40° 30' N., *Long.* 14° 45' E.).

Life-saving.—A line-throwing apparatus is maintained at Salerno, see page 12.

Port facilities.—A moderate stock of coal is normally maintained.

Small stocks of fuel oil and of motor spirit are normally maintained.

Fresh provisions are available. Fresh water is laid on to Banchina Manfredi and Banchina di Ponente and water can also be supplied by water boat.

Small repairs can be undertaken; there is a slipway with a maximum capacity of 500 tons.

Chart 1596, plan of Port Salerno.

Banchina Manfredi is served by the railway and there is a 2-ton crane on this quay. There are numerous lighters in the port.

There is a civil hospital of moderate size in the town.

- 5 There is daily sea communication with Amalfi and with other Italian ports.

Chart 3932.

- Coast.**—From the root of the new mole forming the eastern side of Porto di Salerno, the coast trends south-south-eastward for about 15 22 miles to Agropoli and is backed by a wide plain which extends to within about 2 miles of the latter town. Il Torrione, a prominent square fortress, stands on a rounded hill on the coast about half a mile east-south-eastward of the root of the new mole.

- Torre Angellara (Ancellara), situated on the coast about 1½ miles 15 south-eastward of Il Torrione, is a massive square building, painted in black and white horizontal bands and surmounted by a small house. About 2 miles farther south-eastward, Torre Vicentina (Picentino), a circular ruined tower, low, dark and half hidden by surrounding vegetation, stands at the mouth of a river of the same name.

- 20 Torre Tusciano (*Lat. 40° 35' N., Long. 14° 53' E.*), white, circular and prominent, stands on the coast about 3½ miles south-eastward of Torre Vicentina; it is surmounted by a white hut with a flagstaff. A white factory stands on the beach close southward of Torre Tusciano and behind it is the small village of Spineta, the buildings of which are 25 hidden from seaward by vegetation.

- Fiume Sele enters the sea about 6½ miles south-south-eastward of Torre Tusciano, and owing to the tall trees which line its banks its course is visible from some distance seaward although its mouth is not easily distinguished. There are depths of 7 feet (2^m1) on a bar at its 30 mouth and the river can be ascended for some distance in a small boat. Two towers stand on the southern side of the river entrance; one is slender, the other is more massive and surmounted by a small house.

- The ruins of the ancient Greek city of Posidonia, later called Pesto, are situated about 4½ miles south-eastward of the mouth of Fiume Sele 35 and about three-quarters of a mile inland. Several temples still stand among the ruins and are visible from a distance of 6 or 7 miles offshore. The circular Torre di Pesto stands about one cable within the coast westward of the ruins and can be identified by the huts surrounding it.

- Monte di Soprano, 3,550 feet (1,082^m0) high, about 5 miles eastward 40 of Torre di Pesto, and Monte Sottano, 2,073 feet (631^m9) high, about 1½ miles south-westward of Monte di Soprano, dominate this part of the coast; there are numerous villages on their slopes, some of which are clearly visible from seaward.

- Between the mouth of Fiume Sele and Torre San Marco, a slender 45 circular building on the coast about 7 miles south-south-eastward, the coast is flat and free from dangers; the high land begins to approach the coast abreast Torre di Pesto and reaches it at Torre San Marco. If visiting the ruins of Pesto, landing can be effected on a beach fronting Torre di Pesto, but caution is necessary as a shoal sandy bank, on 50 which the sea often breaks, extends about a quarter of a cable offshore and the depths off this part of the coast are decreasing.

Chart 1405, plan of Agropoli bay.

Agropoli.—**Light.**—The town of Agropoli is situated on the south-western side of a short, steep and rocky promontory about 1½ miles

Chart 1405, plan of Agropoli bay.

south-south-westward of Torre San Marco ; the coast between the tower and the root of the promontory consists of a sandy beach named Spiaggia di Licuiella. The north-western side of the promontory is penetrated by numerous caves, and the south-western side, abreast the town, is fronted by a small and shallow cove where local craft find shelter. The bottom is sand and the holding ground is good. A concrete pier, with depths of from 3 to 5 feet (0^m9 to 1^m5) alongside its head, extends about 66 feet (20^m1) from the shore of the cove. 5

A light is exhibited, at an elevation of 139 feet (42^m4), from a small square tower on a square hut, painted grey with white battlements, 33 feet (10^m1) in height, situated on Punta Fortino, the western extremity of the promontory. 10

From an offing of about 4 miles, the following landmarks may be identified :—The light-structure on Punta Fortino ; Torre di San Francesco (*Lat.* 40° 21' N., *Long.* 14° 59' E.), square and surmounted by a white building, which stands on the south-western entrance point of the cove, about 3½ cables south-westward of Punta Fortino ; and Scoglio di Trentova, about 3½ cables south-westward of Torre di San Francesco. From a greater distance, a ruined castle which dominates the town may be distinguished, and the tall chimney of a brick factory situated eastward of the town, is prominent when viewed from north-westward. 15 20

Anchorage.—There is anchorage north-westward of the promontory, in depths of about 7 fathoms (12^m8), sand and good holding ground, with Punta Fortino light-structure bearing about 170°, distant about 6½ cables. The anchorage is exposed to winds from the western semi-circle and strong north-westerly winds, which in winter sometimes continue for three days, raise a heavy sea and render the anchorage untenable. 25 30

Coast.—Between Punta Fortino and Punta Pagliarolo, about 3 miles south-westward, the coast is high, steep and fringed with rocks. The ruins of a tower stand amongst dense vegetation on the steep slope of Punta Trentova, about 2 miles west-south-westward of Punta Fortino and there is another tower in ruins on Punta Pagliarolo ; both of these towers are difficult to distinguish from an offing. 35

Chart 3932.

From Punta Pagliarolo the coast trends southward for about 1½ miles to the village of Santa Maria di Castellabate, and is low, sandy and uniform. This village, which in 1941 had a population of about 2,700, consists of a long line of houses along the coast which here is rocky. Southward of the village, the coast consists of a sandy beach backed by land gradually rising in fertile hills the slopes of which are dotted with houses. 40

The town of Castellabate, which in 1941 had a population of about 2,900, is situated at an elevation of 915 feet (278^m9) on a hill about 2½ miles south-south-eastward of Punta Pagliarolo and about a quarter of a mile inland. On the summit of the hill, north-westward of the town, are a castle and other buildings, and on the western slopes of this hill are scattered houses which are dominated by a square belfry. 45 50

From the beach abreast Castellabate, the coast trends south-westward for about 1½ miles to Punta Torricella ; this stretch of coast is hilly and along it are scattered the houses of the village of San Marco di Castellabate.

Charts 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3932.

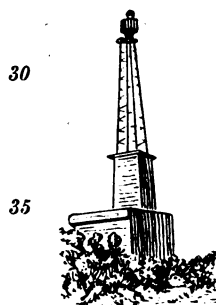
Anchorage.—Vessels with local knowledge may obtain anchorage off Santa Maria di Castellabate, in depths of about 11 fathoms (20^m1), sand and good holding ground, about $4\frac{1}{2}$ cables offshore, and anchorage may also be obtained off San Marco di Castellabate, about $1\frac{1}{2}$ cables offshore, in depths of about $5\frac{1}{2}$ fathoms (10^m1); the latter anchorage is preferable as the holding ground is better there. Both these anchorages are untenable with winds from the western semi-circle. With northerly winds, vessels may obtain shelter off Ogliastro, *see below*.

- 10 **Coast.—Islet and dangers.—Light.**—From Punta Torricella (*Lat. $40^\circ 16' N.$, Long. $14^\circ 56' E.$*) the coast trends south-westward for about $1\frac{1}{2}$ miles to Punta Licosa, a low and salient point on which are the houses of Licosa village. About half a mile eastward of the point, a white church stands at an elevation of 577 feet (175^m9) dominating
15 the village of Sant' Antonio, and is prominent from seaward. Monte Cozzotagliato, 853 feet (260^m0) high and surmounted by a white pillar, is situated about three-quarters of a mile eastward of Punta Licosa, and La Torricella, 1,050 feet (320^m0) high, about one mile farther south-eastward, is surmounted by a ruined tower; except when
20 viewed from southward, the summit of La Torricella appears as two peaks.

Isolotto di Licosa, situated about 2 cables westward of Punta Licosa, is low and yellowish like the coast eastward of it, and is therefore not easily distinguished from north-westward. The islet stands
25 on a rocky bank, which, with depths of less than 3 fathoms (5^m5) over it, extends about 5 cables, and with depths of less than 5 fathoms (9^m1) over it, about 8 cables, westward of Punta Licosa. There are depths of about 5 feet (1^m5) in the channel between Isolotto di Licosa and the mainland.

Secche di Licosa, some patches of rock and sand with a least depth of 19 feet (5^m8) over them, lie between three-quarters of a mile and $1\frac{1}{2}$ miles westward of Isolotto di Licosa.

A light is exhibited, at an elevation of 39 feet (11^m9), from a grey, iron framework structure on a concrete base, 30 feet (9^m1) in height, situated on Isolotto di Licosa.



Isolotto di Licosa
light-structure.

- 40 **PUNTA LICOSA TO PUNTA ISCOLELLI.—Coast. — Dangers. — Anchorages.**—From Punta Licosa the coast trends south-eastward for about 2 miles to Punta dell' Ogliastro and is rugged and fringed with rocks, awash and above water. A bank on which the depths are less than 3 fathoms (5^m5) fronts this stretch of coast extending as much as
45 3 cables offshore; and a detached rocky patch, with a least depth of 10 feet (3^m0) over it, lies about three-quarters of a mile westward of Punta dell' Ogliastro and about $3\frac{1}{2}$ cables offshore.

Torre dell' Ogliastro, square and in ruins, stands on the extremity of the point of that name, and behind the tower is an isolated house
50 with a red roof. Punta dell' Ogliastro is low and flat with rocky sides and is fringed by rocks and shoals which extend about one cable offshore. The village of Ogliastro which in 1941 had a population of about 1,300, is situated about 4 cables north-eastward of Punta dell' Ogliastro.

Chart 3932.

Vessels with local knowledge may obtain anchorage off Ogliastro, in depths of about $3\frac{1}{4}$ fathoms (5^m9), sheltered from winds from the northern semi-circle.

Between Punta dell' Ogliastro and Punta Timpe Rosse, the extremity 5 of a high promontory fringed by numerous rocks, situated about $1\frac{1}{2}$ miles east-south-eastward, the coast forms a bight, the shore of which is sandy to within about 4 cables of Punta Timpe Rosse, whence it becomes rocky.

The village of Agnone is situated on the coast about one mile eastward 10 of Punta Timpe Rosse. This part of the coast is dominated by Monte Madonna della Stella, 3,707 feet ($1,130^m1$) high, about $3\frac{1}{4}$ miles east-north-eastward of Agnone, which may be identified by its light-coloured summit, which contrasts with the dark-coloured lower slopes; there are numerous villages on these slopes, all of them visible from 15 seaward.

Vessels with local knowledge may obtain anchorage off Agnone in convenient depths on a bottom of sand and mud, and good holding ground, at a prudent distance offshore. The anchorage affords good shelter from northerly and north-easterly winds, but is untenable 20 during onshore winds. Local agricultural produce from the surrounding villages is exported in small coasting vessels which visit the anchorage off Agnone for this purpose.

The village of Acciaroli (*Lat. $40^\circ 11' N.$, Long. $15^\circ 02' E.$*), which consists mainly of old houses devoid of plaster, lies stretched along the 25 rocky coast about 3 miles south-south-eastward of Agnone. Torre Angioina, a large square tower with a turret, stands on a rocky ridge extending from the coast in front of the village; although in poor repair, this tower may be distinguished from a distance of 5 miles offshore, and the slender white belfry of the village church also shows 30 up well from seaward. On the south-eastern side of the village, which is protected by a mole about one cable long, is a bridge with three arches.

A 16-foot (4^m9) rocky patch lies about 7 cables north-north-westward of Torre Angioina and about $2\frac{1}{4}$ cables offshore. 35

In fine weather, small craft with local knowledge can obtain anchorage off Acciaroli; the holding ground is good and the anchorage is sheltered from northerly and north-easterly winds.

Torre Calco, partly demolished but visible in clear weather from about 3 miles offshore, is situated on the coast about three-quarters 40 of a mile east-south-eastward of Torre Angioina. The coast between these two towers is fringed by a rocky bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as a quarter of a mile offshore; Secca La Vecchia, a 10-foot (3^m0) rocky patch, lies about midway along this stretch and about $2\frac{1}{4}$ cables offshore. 45

Promontorio La Punta, a promontory situated about $1\frac{1}{4}$ miles east-south-eastward of Torre Calco, is fringed with rocks awash and is surmounted by a tower almost completely demolished. Secca Bove Marino, with a depth of about 6 feet (1^m8) over it, lies about a quarter 50 of a mile south-south-westward of Promontorio La Punta.

In rough weather, the sea breaks on the above-mentioned dangers, and the coast between Punta Timpe Rosse and Promontorio La Punta should be given a berth of at least one mile.

Promontorio La Punta to Capo Palinuro.—Coast.—Anchor-

Charts 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3932.

age.—Marina dei Pioppi is a small sandy bight about $1\frac{1}{2}$ miles east-north-eastward of the ruined tower on Promontorio La Punta. On a beach at the head of the bight is a small group of houses amongst
 5 which is a building consisting of a central block with arches, flanked by two crenellated towers. Torre dei Pioppi, square and isolated, stands on a small eminence eastward of the village.

Marina di Casalicchio lies about one mile eastward of Marina dei Pioppi, and may be identified by an old square tower in ruins, standing
 10 on a steep embankment on the beach. On a hill behind the houses is a building resembling an old fort with a tower on either side of it. The village of Casalicchio, consisting mostly of dark buildings devoid of plaster, stands on the slope of a hill about one mile north-westward of Marina di Casalicchio.

15 Vessels with local knowledge can obtain anchorage off Marina dei Pioppi, sheltered from winds from the northern semi-circle; the holding ground is good. There is also anchorage off Marina di Casalicchio avoiding a sandbank which, with depths of about 13 feet (4^m0) over it, extends here about $3\frac{1}{2}$ cables offshore.

20 Between Marina di Casalicchio and the mouth of Fiume Alento, about $1\frac{1}{2}$ miles south-eastward, the coast is low and sandy and is overlooked by the high hills which flank the river valley. The village of Castellammare di Bruca or di Velia is situated on a rocky, shrub-covered hill about half a mile eastward of the mouth of Fiume Alento
 25 and separated from the sea by a wide beach. A circular tower, standing among a few scattered houses in Castellammare di Bruca, is prominent from seaward, and about one mile farther south-eastward, the ruined Torre Scassata (Spaccata) stands on the beach in front of an olive grove, but can only be distinguished from a short distance
 30 offshore.

Marina di Ascea, about $1\frac{1}{2}$ miles south-eastward of Castellammare di Bruca, consists of a few houses standing on the wide sandy beach. The village of Ascea (*Lat.* 40° 08' N., *Long.* 15° 11' E.), situated on olive-covered slopes about half a mile inland, may be identified by the
 35 dark-red roofs of its houses.

Torre del Telegrafo, square and in ruins, is situated about $2\frac{1}{2}$ miles south-eastward of Castellammare di Bruca; it stands on a coastal spur which slopes steeply down to a low rocky point; high up on the spur is a small white building. Pietra di Nante, an isolated above-
 40 water rock, lies close westward of the extremity of the spur.

Torre di Fiumicello, square and reddish in colour, stands rather high on the coast about 6 cables eastward of Torre del Telegrafo. On its western side is the mouth of a narrow gorge in which is a mill, and south-eastward of it and half-way up the coastal slopes is a tall, whitish
 45 building with a tower on each side.

Marina di Pisciotta, about 2 miles south-eastward of Torre di Fiumicello, consists of four groups of houses on a shingle beach. A ridge of rocks, awash, extends from the coast abreast the third group from north-westward and boats may effect a landing under its lee. The
 50 village of Pisciotta, about half a mile inland, stands on the olive-covered slopes of a conical hill surmounted by a church.

Torre Piano di Mare, white, square and crenellated, with an iron bridge close south-eastward of it, stands on a plateau close to the coast about $2\frac{1}{2}$ miles south-eastward of Torre di Fiumicello and close

Charts 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3932.

south-eastward of Marina di Pisciotta ; it forms an excellent landmark for identifying the locality.

Vessels with local knowledge can obtain anchorage off Marina di Pisciotta, in depths of from 8 to 11 fathoms (14^m6 to 20^m1), weed and rock, about $3\frac{1}{4}$ cables offshore ; vessels are advised to use an anchor buoy.

A large mill stands on the beach about $5\frac{1}{2}$ cables south-eastward of Marina di Pisciotta ; Torre Ficaiola, square and surmounted by a white hut, is situated close inland, and a little above, the mill, but owing to its reddish colour, the tower is not easy to distinguish from the land behind it.

Small vessels with local knowledge can find anchorage in depths of about 4 fathoms (7^m3), about $1\frac{1}{2}$ cables offshore abreast the mill ; landing can be effected on the beach here.

Torre dei Caprioli, situated about $3\frac{1}{4}$ miles south-eastward of Torre Piano di Mare, stands close within the beach and is shaped like a low, truncated pyramid on a square base. From this tower, the coast trends southward for about $1\frac{3}{4}$ miles to the village of Palinuro, which is situated on an olive-covered hill at the base of the northern side of the promontory of Capo Palinuro.

Charts 1405, plan of Port Palinuro, 3932, 3933.

Capo Palinuro. — **Light.** — **Signal station.** — Capo Palinuro is a salient promontory, 656 feet (200^m0) high, with a flat top, which projects about $1\frac{1}{4}$ miles westward from the lower wooded hills of the adjoining coast. Its sides are steep and rocky, and form on the north-eastern side a small bight with sandy shores named Porto Palinuro, which is entered between Palinuro village and Punta del Fortino, about 6 cables west-south-westward. An old fort stands on Punta del Fortino and the houses of Marina di Palinuro extend along the beach at the head of the bight.

Punta della Quaglia, the north-western extremity of the promontory, situated about a quarter of a mile westward of Punta del Fortino, is surmounted by Torre Formicola, an ancient tower ; the mouth of a grotto which can be entered by boats in calm weather is situated in the cliffs immediately under this tower.

Punta del Telegrafo (*Lat. $40^{\circ} 01' N.$, Long. $15^{\circ} 16' E.$*), the south-western extremity of the promontory, situated about half a mile south-south-eastward of Punta della Quaglia, may be readily identified by a light-structure on it, and Punta del Gariglio, about 4 cables eastward of Punta del Telegrafo, may be identified by a signal station on it. The southern coast of the promontory extends about one mile eastward from Punta del Telegrafo, and is rocky and reddish in colour. There is an old fort about $3\frac{1}{4}$ cables east-north-eastward of Punta del Telegrafo and Torre di Calafetente stands near the edge of the steep high coast about 7 cables eastward of the same point. Scoglio della Marina, situated about $1\frac{1}{4}$ cables eastward of the eastern extremity of the promontory, and about $4\frac{1}{2}$ cables eastward of Torre di Calafetente, is high, rocky and whitish, with steep cliffy sides.

A light is exhibited, at an elevation of 676 feet (206^m0), from a white octagonal tower on a two-storeyed dwelling, 46 feet (14^m0) in height, situated about 2 cables



*Capo Palinuro
light-tower.*

Charts 1842, 676, 1440, 2158a, 2158b, 449.

Charts 1405, plan of Port Palinuro, 3932, 3933.

north-eastward of Punta del Telegrafo. A low, massive and circular tower stands near the light-structure.

- 5 A signal station, consisting of a tall tower on a building, is situated at an elevation of 640 feet (195^m1) on the summit of Punta del Gariglio, about 2½ cables eastward of the light-structure. Messages from vessels will be transmitted by telegraph.

Anchorage.—There is anchorage in Porto Palinuro, in depths of from 10 to 11 fathoms (18^m3 to 20^m1), with Torre Formicola in line 10 with the old fort on Punta del Fortino, bearing about 251°. Small vessels with local knowledge can anchor closer inshore off the eastern shore of Porto Palinuro, in depths of from 4 to 4½ fathoms (7^m3 to 8^m2).

- Porto Palinuro affords good shelter from south-easterly winds. 15 With south-westerly winds, although sheltered from the wind, this anchorage is affected by a big sea reflected from the coast. The holding ground is good. Vessels have ridden out very bad weather here with two anchors ahead and one astern, heading north-north-westward. The last stage of bad weather, when after falling calm the wind veers 20 suddenly westward and north-westward, is specially dangerous.

Winds.—When the summit of Monte Madonna della Stella and Monte Bulgaria, 4,016 feet (1,224^m1) high, situated about 8 miles east-north-eastward of Punta del Telegrafo, the highest points in this vicinity, are covered with cloud, north-westerly winds are probable; 25 but if the cloud forms round the flanks of these mountains, leaving the summits bare, southerly winds may be expected.

Chart 3933.

- Ancoraggio della Molpa.**—**Anchorage.**—Ancoraggio della Molpa is a wide bight between the south-eastern extremity of the promontory 30 of Capo Palinuro and the coast about 1½ miles eastward. Fiume Morba flows into the head of the bight about 3½ cables north-eastward of Scoglio della Marina, and the mouth of Fiume Mingardo is situated about half a mile farther eastward. A rounded, rocky cliff, 453 feet (138^m1) high, which appears to overhang a beach at its foot and is 35 surmounted by some inconspicuous ruins, separates the mouths of these two rivers, and near the middle of the foot of this cliff is a cave known locally as Grotta delle Ossa on account of the large number of fossilised bones which have been found in it.

- Vessels approaching Ancoraggio della Molpa may identify the 40 following landmarks :—The village of Centola, situated at an elevation of 1,056 feet (321^m9), about 2½ miles northward of the mouth of Fiume Mingardo; Monte Sant' Antonio, 1,640 feet (499^m9) high, with a white chapel on a saddle near its summit, situated about 2 miles eastward of the mouth of Fiume Mingardo and overlooking the bight; Scoglio 45 Mingardo, a tall, white and isolated rock, situated on a sandy beach about 1½ cables eastward of the mouth of Fiume Mingardo; and Torre di Mingardo (*Lat.* 40° 02' N., *Long.* 15° 19' E.), a square tower about half a mile north-eastward of the rock.

- Anchorage may be obtained in the western part of Ancoraggio della 50 Molpa, at a convenient distance from the coast and from Scoglio della Marina, in depths of from 5 to 5½ fathoms (9^m1 to 10^m1).

Scoglio Mingardo to Punta Iscolelli.—**Coast.**—**Anchorage.**—A sandy beach, formed by deposit brought down by Fiume Mingardo and backed by olive-covered hills, extends about 1½ miles south-

Charts 1842, 198, 676, 1440, 2158a, 2158b, 449.

Chart 3933.

eastward of Scoglio Mingardo, whence the coast becomes steep and rocky. Torre Finosa, whitish and square, stands near the edge of the cliffs about 2 miles south-eastward of Scoglio Mingardo.

Torre dell' Isola, square with heavy cornices, stands on a point about one mile east-south-eastward of Torre Finosa, and about midway between them is Torre d'Arconte, which, although in ruins, can be distinguished from a moderate distance offshore.

Isolotto di Camerota is a large, low rock, covered with vegetation and separated from the point on which Torre dell' Isola stands, by a channel about three-quarters of a cable wide with depths in it of from 7 to 13 feet (2^m1 to 4^m0).

About half a mile eastward of Torre dell' Isola is the village of Marina di Camerota which stands on the eastern side of a rocky promontory separating two bights, the eastern of which is the more frequented. Torre del Poggio, light-coloured and square, stands overlooking the eastern bight about half a mile east-north-eastward of Marina di Camerota and about one cable inland. The village of Camerota is situated about 2 miles northward of Marina di Camerota at an elevation of 1,056 feet (321^m9), and about midway between them is Torre Teano, square, white and elevated and prominent from seaward.

Punta Zincalo, the eastern entrance point of the bight on the eastern side of Marina di Camerota, is situated about 1½ miles eastward of Isolotto di Camerota; it is surmounted by Torre di Punta Zincalo, also square, but more squat and darker than Torre Teano.

Vessels with local knowledge may obtain anchorage in the bight on the eastern side of Marina di Camerota, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), sand, with Torre di Punta Zincalo bearing about 097° and in line with Torre di Cala Bianca, about 11 cables farther eastward. Landing may be effected at a small quay on a beach between Marina di Camerota and the coast in front of Torre del Poggio.

From Punta Zincalo, the coast trends eastward for about 1½ miles to Punta Iscolelli and is steep and rocky and indented by several coves of which Cala Bianca, about one mile eastward of Punta Zincalo, is the largest.

GOLFO DI POLICASTRO.—General remarks.—Golfo di Policastro is entered between Punta Iscolelli and Isolotto Sant' Ianni, about 14 miles eastward. Like Golfo di Salerno, the eastern and western shores of the gulf are high and rocky while the head is low and sandy with numerous villages, of which Scario, Policastro and Sapri are the most important.

The gulf is encircled by mountains which approach to within a relatively short distance of the coast and rise westward to Monte Bulgaria (page 436) and eastward to Monte Caccovello, 4,961 feet (1,512^m1) high, about 5 miles northward of Isolotto Sant' Ianni. Monte San Biagio, 2,041 feet (622^m1) high, about 1½ miles northward of Isolotto Sant' Ianni, may be identified by the white belfry of Maratea (Lat. 40° 00' N., Long. 15° 44' E.) on its northern slopes, and is a good landmark.

The depths in Golfo di Policastro are great and its shores are generally clear of dangers.

Western side of the gulf.—Coast.—Punta Iscolelli, light-coloured and bare, is moderately high with steep rocky sides and is surmounted

Charts 1842, 676, 1440, 2158a, 2158b, 449.

Chart 3933.

by a tower. From Punta Iscolelli, the western shore of the gulf trends north-eastward for about $4\frac{1}{4}$ miles to Torre Spinosa.

Porto Infreschi is a small cove about half a mile north-eastward of Punta Iscolelli; except at its head where there is a beach, the sides of the cove are steep and rocky. Torre Infreschi, in ruins, stands on the south-western entrance point a little above some houses. Small vessels with local knowledge can obtain shelter in the cove during settled winds from between north-west and north-east, but the anchorage should be quitted on the first indication of onshore winds.

Torre Mozza, situated at a moderate elevation on a point of the same name about $1\frac{1}{4}$ miles north-eastward of Torre Infreschi, is light-coloured, square and partly demolished. About one mile north-eastward of Torre Mozza is another tower, also square but entire and standing at a greater elevation on a pointed hill. About midway between these towers is Vallone del Piombo, a picturesque valley through which Torrente di Piombo flows into the sea.

Torre Spinosa, square with heavy cornices, stands about half-way up the coastal slopes about $2\frac{1}{2}$ miles north-eastward of Torre Mozza, and is prominent from seaward.

Fishing nets.—Tunny fishing nets extend about $2\frac{3}{4}$ cables off the coast close south-westward of Torre Mozza.

Chart 1405, plan of Scario anchorage.

Scario.—Light.—Anchorage.—Scario village, which in 1941 had a population of about 690, is situated on the shore of the gulf midway between Torre Spinosa and Torre dell' Oliva, about $1\frac{1}{4}$ miles north-eastward. Small quantities of fresh provisions and fresh water may be obtained in the village. A church, with three rows of windows and a squat tower surmounted by a circular belfry, stands near the beach at the north-eastern end of the village. Monte Bulgaria is the best landmark when approaching Scario, and when seen from about 3 or 4 miles southward of the village, appears as a rocky mass with a curved outline and a precipitous fall on its eastern side.

A light is exhibited, at an elevation of 80 feet (24^m4), from a white octagonal tower attached to a two-storeyed dwelling, 41 feet (12^m5) in height, situated on the beach at the southern end of the village of Scario.



40 Scario light-tower.

There is anchorage off the village, east-north-eastward of the light-structure, in depths of from 7 to 8 fathoms (12^m8 to 14^m6), good holding ground, from $2\frac{3}{4}$ to $3\frac{1}{4}$ cables offshore.

Small vessels anchor off the light-structure, in depths of from $4\frac{1}{2}$ to 5 fathoms (7^m8 to 9^m1), about half a cable offshore. Within this distance, the depths decrease rapidly and there are numerous rocks.

Off the village, north-eastward of the light-structure, there are depths of 3 fathoms (5^m5) about one cable offshore. For large vessels, Scario is the best anchorage in the gulf.

50 *Chart 3933.*

Winds.—When the slopes of Monte Bulgaria and Monte Caccovello are covered with streaks of cloud, locally known as “Secce,” a spell of strong southerly winds is probable.

Northern side of the gulf.—Coast.—Torre dell' Oliva (*Lat.*

Charts 1842, 198, 676, 1440, 2158a, 2158b, 449.

Chart 3933.

40° 04' N., Long. 15° 30' E.) is a large square building situated low down close to the sea. About 6½ cables north-eastward of this tower is the mouth of Fiume Bussento, a river which reaches the coast through a valley between dark mountains. A green islet divides the mouth of the river into two channels and a masonry bridge, prominent from south-south-eastward, crosses the river about a quarter of a mile above its mouth. 5

Between Torre dell' Oliva and Sapri, about 6 miles eastward, the head of the gulf is fronted by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as 3¼ cables, and with depths of less than 5 fathoms (9^m1) over it, as much as half a mile, offshore.

The village of Policastro is situated about three-quarters of a mile north-eastward of the mouth of Fiume Bussento on the olive-covered slopes of a conical hill; an ancient square tower, with a large ruin eastward of it, stands on the summit of the hill at an elevation of 285 feet (86^m9). From this tower, the ground slopes down to the valley of the Bussento and is covered with olive trees. 15

The village of Capitello lies stretched along the coast about 1½ miles eastward of Policastro and is backed by picturesque green hills; there is a square tower close eastward of this village. The village of Ispani stands at an elevation of 942 feet (287^m1) about three-quarters of a mile northward of Capitello and about two-thirds of the way up an olive-covered slope, and may be identified by a slender belfry in it. 20

For about 4 cables eastward of Capitello, the coast is fringed by rocks, locally named Scogli di Sant' Antonio. 25

Marina di Vibonati, also called Villammare, lies about 1½ miles eastward of Capitello and may be identified by a church with a dark square belfry with a clock on its eastern side. At the eastern end of the village is a hillock, surmounted by a square tower and surrounded by a group of houses. The village of Vibonati lies about 1½ miles northward of Marina di Vibonati, and when approaching from south-westward, is hidden by the hills on which Ispani is situated, until nearly abreast Marina di Vibonati; it then shows up, at an elevation of 361 feet (110^m0), on hills enclosing a picturesque valley resembling an amphitheatre. 30 35

In 1941, the village of Vibonati had a population of about 2,000; its houses, which are close together and have dark-red roofs, are dominated by a church with a small white belfry.

Sapri.—Light.—Anchorage.—The town of Sapri, which in 1941 had a population of about 4,500, is situated on a gravel beach at the head of a cove about 1½ miles eastward of the square tower at Marina di Vibonati. The cove, which has high and rocky sides, is entered between Punta del Fortino, about 1½ miles east-south-eastward of Marina di Vibonati, and Capo Bianco, about three-quarters of a mile farther south-south-eastward. Punta del Fortino is low, rocky and surmounted by a light-structure, and on Capo Bianco, which is high and rugged, is a ruined tower of a dark-yellow colour. Fiume Brizzi, which is crossed by a concrete bridge with seven arches, flows into the eastern corner of the head of the cove, about 8 cables north-north-eastward of Capo Bianco (*Lat.* 40° 03' N., *Long.* 15° 38' E.). 40 45 50

Monte Olivella, 3,360 feet (1,024^m1) high, about 2½ miles north-eastward of the head of the cove, overlooks the town and is prominent. Landmarks in the town are :—The white circular belfry of the parochial

Charts 3933, 1842, 198, 676, 1440, 2158a, 2158b, 449.

Chart 3933.

church, situated in the eastern part of the town ; the hospital, a distinctive building resembling a Swiss chalet with a grey projecting roof, surmounted by a small grey tower, situated in the middle of the town, and a house with a small red-brick square tower, situated close north-eastward of the hospital.

A light, known as Carlo Pisicane light, is exhibited, at an elevation of 45 feet (13^m7), from a square tower with an iron balcony, painted red with white edges, 13 feet (4^m0) in height, situated on Punta del Fortino.

- 10 A good anchorage berth in depths of about 6 fathoms (11^m0), and with the maximum swinging room of about 1½ cables, is with the house with the red-brick square tower bearing 037°, and Carlo Pisicane light-structure bearing 294°. Small vessels with local knowledge may anchor nearer the head of the cove, about half a cable offshore, in
- 15 depths of about 3 fathoms (5^m5).

The cove is completely open to south-westerly winds which render the anchorage untenable.

- Port facilities.**—Two wooden landing piers project from the head of the cove, about a quarter of a mile north-westward of the mouth of Fiume Brizzi ; the larger pier is 200 feet (61^m0) long, with depths of 10 feet (3^m0) alongside the head, decreasing to 5 feet (1^m5) at the root. In 1949, the smaller pier was reported to be in a poor condition.

There is a small slipway, suitable only for boats, situated between the two piers.

- 25 Small quantities of motor spirit and lubricants may be obtained. Fresh provisions and fresh water are available in the town of Sapri. There is a small civil hospital in Sapri (*Lat. 40° 04' N., Long. 15° 38' E.*).

- Eastern side of the gulf.—Coast.**—From Capo Bianco, the eastern side of the gulf trends south-eastward for about 7 miles to abreast Isolotto Sant' Ianni, and is high, rocky and rugged.

Scoglio dello Scialandro, a blackish, above-water rock, situated close to the coast about 2 cables southward of Capo Bianco, is the same colour as the coast behind it and, except from south-eastward, is difficult to distinguish.

- 35 Torre delle Grive, about 1½ miles south-eastward of Capo Bianco, stands on a rocky spur rising perpendicularly from the sea at a greater elevation than the ruined tower on Capo Bianco ; it is the same colour as the surrounding rock and is not easily distinguished from seaward.

- 40 The village of Acquafredda, which in 1941 had a population of about 750, is situated in an elevated position among olive trees about one mile east-south-eastward of Torre delle Grive. A viaduct with high arches may be seen both northward and southward of the village, and a prominent tower, the upper part of which is broken away, stands on a hill about a quarter of a mile southward of the village. A third viaduct with ten arches stands in an elevated position about one mile south-south-eastward of the village and is also prominent.

In calm weather landing can be effected on Spiaggia di Fiumicello, a short beach abreast the southern part of Acquafredda.

- 50 Torre Santa Venere, about 3¼ miles south-eastward of Torre delle Grive, stands on a small promontory fronted by rocks extending about 2 cables from the coast ; it can only be distinguished from a short distance offshore.

The town of Maratea, which in 1941 had a population of 3,300, is

Charts 1842, 198, 676, 1440, 2158a, 2158b, 449.

Chart 3933.

situated at an elevation of 1,020 feet (310^m9) on the northern slopes of Monte San Biagio (page 437), about one mile eastward of Torre Santa Venere, and may be seen from a considerable distance seaward; a whitish belfry is prominent in the town. The summit of Monte San Biagio is bare and sharp, and from north-westward, appears to be inclined south-westward, by which characteristic it may be identified from the surrounding mountains. 5

Porto di Maratea (*Lat. 40° 00' N., Long. 15° 42' E.*) is a small cove about 6 cables south-eastward of Torre Santa Venere with rocky sides and a sandy beach at its head; there is a prominent group of houses near the head of the cove. Torre del Porto, low, square and situated on the south-eastern entrance point of the cove, is the same colour as the slope behind it and can only be distinguished from a short distance. 10

Vessels with local knowledge may obtain anchorage in Porto di Maratea, on a sandy bottom abreast the south-easternmost house in the cove. There is a quay abreast this anchorage and landing can also be effected at the foot of Torre del Porto. 15

Isolotto Sant' Ianni, about 1½ miles south-south-eastward of Torre Santa Venere, and about a quarter of a mile offshore, is about 25 feet (7^m6) high, with its lower part blackish and its upper part covered with vegetation; there is a depth of about 6½ fathoms (11^m9) in the fairway of the channel between the islet and the mainland, but this passage should not be attempted without local knowledge. 20

COAST.—Isolotto Sant' Ianni to Capo Scalea.—Islets and dangers.—Anchorage.—From abreast Isolotto Sant' Ianni, the coast trends south-south-eastward for about 3¼ miles to Capo Scalea. 25

Secca della Giumenta, with a least depth of 4 feet (1^m2) over it, lies about 4 cables south-eastward of Isolotto Sant' Ianni and about a quarter of a mile offshore. 30

Torre Caina, square and in ruins, stands on the summit of a rocky promontory about 1½ miles south-south-eastward of Isolotto Sant' Ianni; from north-westward or south-eastward, the promontory appears as a sharp cone. A moderately large grotto is situated on the northern side of the promontory. 35

Case La Serra, a group of houses the south-easternmost of which is surmounted by some small circular towers, stands on the coast about three-quarters of a mile south-south-eastward of Torre Caina. A rocky spur, faced by a prominent cliff and surmounted by the ruins of Castello di Agnola, projects seaward close south-eastward of Case La Serra. Close westward of this spur is a rocky islet, connected with the coast by a ridge of rocks. 40

Fiume Talago flows into the sea about three-quarters of a mile south-south-eastward of Case La Serra; about half a mile above its mouth, it is crossed by a metal bridge with five arches. The banks of this river are fringed with tall trees. 45

The village of Tortora is situated at an elevation of 1,047 feet (319^m1), near the edge of a plateau which presents a cliff face seaward about 3 miles eastward of Torre Caina, but the village is only clearly visible from south-westward. 50

Torre della Nave, about 2½ miles south-eastward of Torre Caina, stands at an elevation of about 210 feet (64^m0) on a steep rocky spur about 4 cables inland. It consists of a group of buildings standing

Chart 3933.

against the front wall of an old tower, with two small circular turrets at the corners of the side facing the sea.

The village of Praia a Mare is situated about $1\frac{1}{2}$ miles south-south-eastward of Torre della Nave and extends along a wide beach at the foot of the bare Serra Venciuolo which attains an elevation of 1,713 feet (522^m1) about half a mile eastward of the village. There is an ancient chapel, built in a large cavern at the base of this mountain; the entrance to the cavern may be distinguished by a yellowish wall which closes it and by a white belfry which rises close northward of it.

Vessels with local knowledge may obtain anchorage off Praia a Mare in fine weather; the bottom is sand and good holding ground. In bad weather, shelter may be found under the lee of Isolotto Dino, *see* below.

Isolotto Dino (*Lat.* 39° 52' N., *Long.* 15° 47' E.), about $2\frac{1}{2}$ miles southward of Torre della Nave and about $2\frac{3}{4}$ cables offshore, is 213 feet (64^m9) high, flat-topped and cultivated, with bare and precipitous sides. It is connected with the mainland by a ridge of above-water rocks, in the middle of which is a boat passage. At the western extremity of the islet is an old half-ruined tower.

Anchorage may be obtained either northward or southward of Isolotto Dino but both these anchorages are exposed to westerly winds. The best anchorage is with the eastern extremity of the islet bearing 180°, distant about $1\frac{1}{2}$ cables, over a bottom of sand and weed, good holding ground.

When the wind is fresh there is a moderately strong current in the boat channel between the islet and the mainland. Strong winds from between east-north-east and north sometimes cause whirlpools which render anchorage off Isolotto Dino untenable.

Torre Fiuzzo is situated a short distance within the coast abreast Isolotto Dino; on a hill behind this tower are some white houses and higher up is the old turreted Castello di Fiuzzo.

Porto San Nicola is a small sandy bight about $1\frac{1}{2}$ miles southward of Torre Fiuzzo. The village of San Nicola stands on a hill 361 feet (110^m0) high which overlooks the bight. Porto San Nicola may be readily identified by Capo Scalea, *see* below, and by the square Torre di San Nicola, which stands on a low, rocky spur on the south-western entrance point of the bight. Palazzo di Principe, yellowish in colour and situated on high ground, and a two-storeyed house near an arched viaduct are prominent at the head of the bight.

Except for an above-water rock about one cable offshore, around which are depths of 5 fathoms (9^m1), Porto San Nicola is clear of dangers and affords good anchorage, sheltered from winds from the eastern semi-circle, to vessels with local knowledge.

Capo Scalea, about one mile south-westward of Torre di San Nicola, is the western extremity of a promontory, 266 feet (81^m1) high, flat and cultivated on top, with steep and rocky sides. Torre Dino, a circular tower with a superstructure, stands on the summit of the promontory, close northward of Capo Scalea, and is prominent.

Scalea. — Danger. — Light. — Anchorage. — The town of Scalea stands on a hill with medieval ruins on it, about $1\frac{1}{2}$ miles south-eastward of Capo Scalea; its houses are built in terraces, rising one above the other. Inland and overlooking the town are bare mountains and in front of the town is a low and open beach. Scoglio La Torre is a prominent rock lying close southward of the town and con-

Chart 3933.

nected with the beach by a sandy tongue ; it is surmounted by the square Torre di Scalea and by several houses, and from an offing appears as an island. The sandy beach fronting the town extends in a curve between Scoglio La Torre and a dark rocky ridge about 2 cables northward, which projects about a quarter of a cable offshore with a yellowish hut at its root. 5

Small quantities of fresh provisions, fresh water and motor spirit are available in the town.

Secca della Giumenta, consisting of two rocky reefs, awash, parallel with one another and perpendicular to the coast, extends about $2\frac{1}{2}$ cables offshore from a position on the coast close westward of the town. 10

A light is exhibited, at an elevation of 320 feet (97^m5), from a red masonry tower, among a group of houses of a reddish colour, 41 feet (12^m5) in height, situated on high ground near the north-western end of the town. 15

Vessels with local knowledge can anchor close to Scoglio La Torre but should avoid anchoring near the blackish rocky ridge mentioned above, as the bottom there is rocky. 20

In December and January, east-north-easterly winds are sometimes so violent as to render this anchorage untenable.

Currents.—The currents are influenced by the winds. There is usually a north-going current marked by discoloured water due to deposit brought down by two rivers, Fiume Lao and Fiume Abatemarco. 25

Capo Scalea to Diamante. — Coast. — Anchorage. — From Capo Scalea (*Lat.* 39° 50' N., *Long.* 15° 46' E.), the coast trends southwards for about $9\frac{1}{2}$ miles to the village of Diamante. On this stretch of coast, the villages of Cirella Vecchia, Grisolia and Diamante, which are described below, are prominent, and southward and farther inland, Monte Montea, 5,853 feet (1,784^m0) high, about $6\frac{1}{4}$ miles east-south-eastward of Diamante, and Monte Cozzo San Gineto, a sharp peak, 3,586 feet (1,093^m0) high, about $2\frac{1}{2}$ miles southward of Monte Montea, both make excellent landmarks. 30

The mouth of Fiume Lao is situated about 2 miles, and that of Fiume Abatemarco about $3\frac{1}{2}$ miles, southward of Scoglio La Torre ; both these rivers flow through wide and well-wooded valleys. About 3 miles eastward of Scalea, the village of Santa Domenica may be seen at an elevation of 994 feet (303^m0), and about $1\frac{1}{2}$ miles east-south-eastward of the mouth of Fiume Abatemarco, the village of Cipollina stands at an elevation of 361 feet (110^m0). 40

About $2\frac{1}{2}$ miles southward of the mouth of Fiume Abatemarco is the village of Cirella Vecchia, a remarkable group of ruined houses standing on the crest of a bare hill close to the coast. On the highest part of the hill is a prominent ruined tower. 45

The village of Grisolia, about $1\frac{1}{2}$ miles eastward of Cirella Vecchia, stands on a summit at an elevation of 1,446 feet (440^m1) ; a white belfry may be distinguished amongst the houses.

Between Grisolia and the village of Maierà, which stands at an elevation of 1,181 feet (360^m0) about 3 cables southward, Torrente Vaccata flows through a deep valley towards the coast. 50

The village of Cirella, situated on the coast about 4 cables south-westward of Cirella Vecchia, consists of a few houses standing on a rocky projection, and is fronted by a remarkable arched wall.

Charts 1842, 198, 676, 1440, 2158a, 2158b, 449.

Chart 3933.

Isolotto Cirella is situated about one mile south-south-westward of Cirella village and about $3\frac{1}{2}$ cables offshore; seen from northward or southward, the islet presents a rounded outline. A square tower stands on the summit, and an above-water rock lies close eastward, of the islet.

There are depths of 6 fathoms (11^m0), sand and weed, in the middle of the channel separating the islet from the mainland; the depths decrease rapidly towards the sides of the channel and there are depths of $2\frac{3}{4}$ fathoms (5^m0) about a quarter of a cable from the islet.

Small vessels with local knowledge take shelter under the lee of Isolotto Cirella when surprised by gales.

The village of Diamante is situated about $1\frac{1}{2}$ miles south-south-eastward of Isolotto Cirella; its houses, which are mostly white, are scattered over a small coastal plateau, about 82 feet (25^m0) high. Torre di Diamante, a square tower, surmounted by a flagstaff, is prominent in the village. A rocky reef extends a short distance westward from the extremity of the plateau on which the village stands.

The bottom abreast the village is rocky and vessels with local knowledge anchor about $2\frac{1}{4}$ cables southward of the village where the holding ground is good and where vessels can ride out strong northerly winds. Temporary anchorage, on a bottom of sand and weed, may be obtained off Spiaggia di Scario, a beach close north-westward of Diamante.

Currents.—The currents are usually weak but attain some strength in the channel between Isolotto Cirella and the mainland. Although largely influenced by the wind, the currents follow the coastline, and vessels at anchor in this locality do not necessarily lie head to wind and sea.

Diamante to Capo Testa. — Coast. — Dangers. — Light. — Anchorage.—From Torre di Diamante (*Lat.* $39^{\circ} 41' N.$, *Long.* $15^{\circ} 49' E.$), the coast trends south-south-eastward for about 10 miles to Capo Testa; the summits of Monte Montea and Monte Cozzo San Gineto (page 443) are good landmarks when navigating in this vicinity.

Capo Tirone, a rocky mass surmounted by a moderately prominent building, is situated about $3\frac{1}{4}$ miles south-south-eastward of Torre di Diamante. Belvedere Marina, a village consisting of a few prominent houses, stands close eastward of Capo Tirone; from seaward, four large contiguous sheds are prominent in this village.

Capo Tirone is fringed by rocks and shoals which extend about $1\frac{1}{2}$ cables offshore; a sunken reef lies about half a cable off, and parallel with, a beach in front of Belvedere Marina. Belvedere Marittimo, a small town about three-quarters of a mile east-south-eastward of Capo Tirone, is easily identified; it stands at an elevation of 492 feet (150^m0) on a rounded hill which rises from a plateau with rocky sides which overhang the sea.

Castello del Principe lies close to the coast about 2 miles south-south-eastward of Capo Tirone; it may be identified, especially when seen from southward, by the towers at its corners and by four arched windows on its southern side.

Numerous streams enter the sea along this stretch of coast, the most important being Torrente San Gineto, which flows into the sea about half a mile southward of Castello del Principe and is crossed by a bridge close within its mouth.

Charts 1842, 1976, 676, 1800, 1440, 2158a, 2158b, 449.

Chart 3933.

Torre Parisi, about $1\frac{1}{2}$ miles southward of Castello del Principe, is square, whitish and crenellated.

Capo Bonifati is a short projection of the coast about $4\frac{1}{4}$ miles southward of Capo Tirone; it may be identified by a prominent green hill situated close within the cape and surmounted, at an elevation of 833 feet (253^m9), by the circular Torre del Capo, which is prominent from seaward. On the slopes of this green hill are the houses of the village of Citadella di Capo Bonifati.

Torre Bonifati, a square well-preserved building, stands in a walled enclosure on a rocky spur extending from Capo Bonifati; there are two other buildings on the eastern side of the enclosure.

Capo Bonifati light is exhibited, at an elevation of 206 feet (62^m8), from a grey iron framework structure on a tank, 25 feet (7^m6) in height, situated about three-quarters of a mile south-south-eastward of Capo Bonifati.

About three-quarters of a mile east-south-eastward of Capo Bonifati light-structure is Torre di Rienzo, a square tower surrounded by the remains of a wall and standing on a steep, rugged and reddish part of the coast.

Capo Testa, about one mile south-eastward of Torre di Rienzo, is a dark-coloured rocky spur which interrupts a long, light-coloured line of beach. About half-way up a slope behind the cape is a large group of yellow houses which serves to identify the locality. The chapel of Santa Maria standing on Monte Cozza La Serra, at an elevation of 2,034 feet (620^m0), about $1\frac{1}{4}$ miles eastward of Capo Testa, is an excellent landmark.

Capo Testa to Paola.—Coast.—Anchorage.—About $1\frac{1}{4}$ miles south-eastward of Capo Testa the town of Cetraro, which in 1941 had a population of about 5,300, stands on a hill, 249 feet (75^m9) high, overhanging the coast. About a quarter of a mile north-westward of the town, a stream flows into the sea and is crossed by a metal bridge close within its mouth.

The village of Acquappesa (*Lat. 39° 30' N., Long. 15° 57' E.*), situated about $1\frac{1}{2}$ miles south-south-eastward of Cetraro, stands at an elevation of 262 feet (79^m9) on a hill on the northern side of which a river enters the sea; a few houses stand on a beach at the foot of the hill.

The small village of Intervolata consists of a group of houses situated at an elevation of 66 feet (20^m1) on a coastal hill, about $1\frac{1}{4}$ miles south-south-eastward of Acquappesa; about midway between these two villages is a prominent white patch. A pointed rock about 33 feet (10^m1) high lies near the beach close southward of Intervolata, and a little farther southward is a masonry bridge with three arches.

Guardia Piemontese, a town about $1\frac{1}{4}$ miles east-south-eastward of Intervolata and about one mile inland, is built on the crest of a hill 1,690 feet (515^m1) high, and is moderately prominent from seaward; a circular tower overlooks the town. From between the bearings of 045° and 135°, the town appears to be built on flattish ground, but when bearing less than 045°, the hill on which the town stands appears conical and only the tower and a few buildings can be distinguished.

Between Intervolata and Torre di Fuscaldò, a white, circular and well-preserved tower standing at an elevation of 105 feet (33^m0), about $4\frac{1}{4}$ miles south-south-eastward, the coast is backed by green hills which are dotted with houses. The small town of Fuscaldò, about three-

Charts 1842, 198, 676, 1440, 2158a, 2158b, 449.

Chart 3933.

quarters of a mile eastward of the tower of that name, stands on a hill 1,240 feet (377^m9) high, covered with olive trees, and may be identified by the compactness of its buildings and the dark-red colour of their 5 roofs. In front of, and below, the town, is a church with a small cupola on either side of its façade.

Marina di Fuscaldo lies stretched along the sandy coast westward of Fuscaldo and about a quarter of a mile south-south-westward of the tower of that name. On the northern side of this village are the wide 10 mouths of Torrente Mercado and Torrente Gariglio.

In fair weather, vessels with local knowledge may obtain anchorage off Marina di Fuscaldo, in depths of about 5½ fathoms (10^m1), sand, good holding ground. During the less favourable seasons, vessels anchor farther offshore in greater depths. It is dangerous to remain at 15 this anchorage during south-westerly winds.

Paola.—Light.—Anchorage.—The town of Paola, which in 1941 had a population of about 8,300, is situated about 3½ miles south-south-eastward of Torre di Fuscaldo and about half a mile inland; it stands in a natural amphitheatre on a spur of the coastal range, 20 308 feet (93^m1) high. In an elevated position close southward of the town, is a prominent arched viaduct, and another viaduct connects the town with Marina di Paola on the coast westward of it. Torre di Paola, a large square building with a superstructure, stands on a hill close northward of Marina di Paola. Torre Castello, circular but 25 broken away on its western side, overlooks Marina di Paola from the summit of a bare hill behind the elevated arched viaduct.

In 1941, a harbour protected by two jetties was under construction abreast Marina di Paola.

A light is exhibited, at an elevation of 177 feet (54^m0), from a small 30 lantern situated on Torre di Paola.

Vessels with local knowledge may obtain anchorage off Marina di Paola, southward of Torre di Paola, about 1¾ cables offshore, in depths of about 8 fathoms (14^m6). In fine weather, small vessels can anchor closer inshore, in depths of about 3½ fathoms (6^m4), good holding 35 ground. If bad weather sets in, this anchorage, which is dangerous with easterly as well as with onshore winds, should be quitted at once. Anchorage abreast Torre di Paola (*Lat.* 39° 22' N., *Long.* 16° 02' E.) should be avoided as the holding ground is bad, and this position is more exposed to the sudden breakers, locally named "guttafarra," 40 which, especially in summer, come in from south-westward.

Winds.—Winds from between north and east, especially east-north-easterly winds, which, owing to the peculiar formation of the neighbouring mountains, are very strong, sometimes cause considerable damage, and unless vessels are secured to the land by stout hawsers, 45 they will be driven out to sea. South-westerly and south-south-westerly winds, if strong, raise a considerable sea, and such winds occur most often in winter.

Paola to Amantea.—Coast. — Dangers — From Paola, the coast trends southward for about 13½ miles and consists of a narrow 50 beach closely backed by hills on which are numerous small towns and villages.

The town of San Lucido, which in 1941 had a population of about 5,800, is situated about 3½ miles southward of Torre di Paola; it is built on a plateau, 197 feet (60^m0) high, which rises steeply from the

Charts 1842, 1976, 676, 1800, 1440, 2158a, 2158b, 449.

Chart 3933.

beach. Close northward of the town is a prominent high wall and a castle, almost in ruins, stands on a rocky mass in front of the town.

The coast abreast San Lucido is fringed with rocks and shoals extending about one cable offshore ; one of these, an above-water rock, 5 lies abreast the ruined castle.

The town of Fiumefreddo Bruzio, situated about $4\frac{1}{4}$ miles southward of San Lucido, stands at an elevation of 722 feet (220^m1), on a spur of the coastal range, about half-way up the slope. Southward of the town are an earthwork and the ruins of a castle, while on a beach 10 northward of the spur on which the town stands, are an iron and a masonry bridge. There is a prominent group of white buildings on a beach southward of the town, and the distinctive peak of Monte Cocuzzo, 5,056 feet (1,541^m1) high, rises about $3\frac{1}{4}$ miles east-south-eastward of the group and may be readily identified from seaward. 15

The town of Longobardi, situated at an elevation of 984 feet (299^m9), half-way up the slopes of a mountain about $1\frac{3}{4}$ miles southward of Fiumefreddo Bruzio and about three-quarters of a mile inland, is prominent from seaward.

The village of Belmonte is situated at an elevation of 745 feet 20 (227^m1), about $2\frac{3}{4}$ miles southward of Longobardi, and may be identified by a white octagonal tower, 98 feet (29^m9) in height, rising from a broad crenellated terrace and surmounted by a large cross ; the cross is illuminated at night by *red* lights which render it very prominent.

Torrente Verre enters the sea about three-quarters of a mile west- 25 ward of Belmonte and close within its mouth it is crossed by a metal bridge. Close northward of the mouth of this river is a group of houses, of which the southernmost, which is also the most prominent, is large, square and of a dark colour.

Scogli Isca, two above-water rocks about half a cable apart, the 30 larger of which is 39 feet (11^m9) high, are situated about 3 cables offshore and about three-quarters of a mile south-south-westward of the mouth of Torrente Verre.

Amantea.—Anchorage.—The town of Amantea, which in 1941 had a population of about 8,000, is situated about one mile south- 35 eastward of Scogli Isca, partly on a plain and partly on the slope of a hill which is dominated by an old circular tower. A stone embankment with a large arch is situated at the foot of the houses in the town, and a cemetery, moderately prominent from seaward, is situated on a hillside close southward of the town. 40

The village of Marina di Amantea (*Lat.* 39° 08' N., *Long.* 16° 04' E.), situated on the coast close westward of the town, may be identified by the tall chimney of a factory, and by a slender spire at its southern end. Fiume delle Monache flows into the sea between high banks close northward of the town and village and, close above its mouth, is 45 crossed by two metal bridges.

Vessels with local knowledge may obtain anchorage close inshore abreast Marina di Amantea, in depths of from $4\frac{1}{2}$ to 5 fathoms (8^m2 to 9^m1), sand and good holding ground.

Amantea to Capo Suvero.—Coast.—From the mouth of Fiume 50 delle Monache, the coast trends south-south-eastward for about $2\frac{1}{4}$ miles to Torre della Guardia, a white circular building standing on a steep hill which terminates in a blackish cliff fringed by rocks. About $3\frac{1}{2}$ cables south-westward of Torre della Guardia and about a

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Chart 3933.

quarter of a mile offshore, is Scoglio Formicola, a rock about 2 feet (0^m6) high.

Fiume Oliva enters the sea about 1½ miles southward of Torre della Guardia; it has a bed of whitish gravel and is crossed by a concrete and by an iron bridge, close within its mouth.

Torre San Giovanni, circular, attached to a square building and surrounded by numerous huts, stands on the coast about 2 miles south-south-eastward of Torre della Guardia.

10 The mouth of Fiume Savuto is situated about 1½ miles southward of Torre San Giovanni and may be recognised by a dense clump of trees close to it, by its whitish colour, and by a metal bridge with three arches, which crosses it.

About 8 cables south-south-westward of Torre San Giovanni and 15 about half a mile offshore, is a 26-foot (7^m9) patch, surrounded by deep water.

Charts 3933 and 3934.

Torre del Casale, situated at an elevation of about 500 feet (152^m4), about 1½ miles south-eastward of the mouth of Fiume Savuto, stands 20 on the flattish crest of a hill which slopes steeply down to the southern bank of that river.

Torre dei Lupi, a truncated conical building on the coast about 2 miles south-south-eastward of Torre del Casale, stands on a rocky spur extending to the beach and has two windows facing the sea. 25 From this tower, the coast trends south-south-eastward for about 2½ miles to Capo Suvero.

Capo Suvero.—Light—Danger.—Capo Suvero, though of little elevation, rises steeply from the beach. A light is exhibited, at an elevation of 141 feet (43^m0), from an octagonal masonry tower with 30 a grey lantern on a white two-storeyed building, 49 feet (14^m9) in height, situated on Capo Suvero.

The cape is easily identified by the light-structure and by the following landmarks:—Torre Spineto, a circular ruined tower, standing about 8½ cables eastward of, and higher than, the light-structure; 35 Monte Mancuso, 4,232 feet (1,289^m9) high, situated about 4 miles north-eastward of Torre Spineto; the towns of Gizzeria and Falerna, on slopes which overlook the cape, the former at an elevation of 2,067 feet (630^m0), about 2½ miles north-eastward, and the latter at an elevation of 1,804 feet (549^m9), about 3 miles northward, of Torre 40 Spineto; and, closer to the coast, the village of Castiglione, standing on an isolated hill, 656 feet (199^m9) high, about 1½ miles northward of Torre Spineto, with a church on an eminence close southward of the village.

A rocky bank, with a depth of 15 feet (4^m6) over its extremity, fringes 45 Capo Suvero and extends as much as a quarter of a mile offshore.

Chart 3934.

GOLFO DI SANT' EUFEMIA.—General remarks.—Golfo di Sant' Eufemia is entered between Capo Suvero (*Lat.* 38° 57' N., *Long.* 16° 10' E.) and Capo Vaticano, about 25 miles south-westward. Between Capo Suvero and Torre di Rocchetta, about 14½ miles south-south-westward, the shore of the gulf is a sandy beach which, on the eastern 50 side of the gulf, is wide and is backed by a plain; but it gradually narrows as the hills approach the coast close northward of Pizzo,

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Chart 3934.

about $5\frac{1}{2}$ miles eastward of Torre di Rocchetta, and on this latter stretch it is a narrow strip. From Torre di Rocchetta to Capo Vaticano, about 12 miles west-south-westward, the shore of the gulf is high, rocky and interspersed with several narrow beaches, and there are numerous villages, both close to the sea and on the hills inland. In favourable conditions of weather, vessels can anchor anywhere off the shores of the gulf, but these shores are exposed to all winds from the western semi-circle, the only place of shelter being Vibo Valentia Marina (page 450). 5
10

Eastern side of the gulf.—Coast.—Anchorage.—From Capo Suvero, the sandy coast trends east-south-eastward for about 3 miles to Sant' Eufemia Marina; there are some lakes close within the western part of this stretch and Torre Tavano, a small circular building, stands on gradually rising ground about $2\frac{1}{4}$ miles eastward of Capo Suvero and about half a mile inland. The town of Sambiasse stands, at an elevation of 656 feet (199^m9), about $5\frac{3}{4}$ miles eastward of Capo Suvero; from south-westward, the town is seen on the southern side of a prominent light-coloured patch on the hills. 15
20

Sant' Eufemia Marina consists of a few houses; close to it is Bastione di Malta, a large dark and crenellated square tower. On the coast close westward of the tower, a concrete pier projects about 164 feet (50^m0) from the shore; there was formerly a depth of 10 feet (3^m0) alongside its head, but in 1949, it was reported that, owing to silting, the depths alongside the head had decreased to a few inches only. The village of Sant' Eufemia, situated about one mile north-eastward of Bastione di Malta, consists of a group of houses with red roofs standing amongst trees. 25

There is anchorage off Sant' Eufemia Marina for vessels with local knowledge; the bottom is sand and the holding ground is good, but the anchorage is exposed to winds from the western semi-circle and is untenable during these winds. 30

Between Sant' Eufemia Marina and the mouth of Fiume Angitola, about $9\frac{1}{4}$ miles southward, the sandy coast is backed by an extensive plain, which gradually narrows as the river is approached; numerous villages are scattered about the plain. 35

Torre di Mezzapraia is dark and stands near the coast about $6\frac{1}{2}$ miles southward of Bastione di Malta, close to a low square fort in the shape of a truncated pyramid, southward of which is a large white building.

The village of Francavilla Angitola, which overlooks the valley of Fiume Angitola, stands, at an elevation of 1,017 feet (310^m0), on a range of hills about $3\frac{1}{2}$ miles south-eastward of Torre di Mezzapraia, and about 3 miles inland; from south-westward, these hills may be recognised by some extensive yellowish streaks on them. The mouth of Fiume Angitola may be distinguished by a metal bridge which crosses it amidst trees, about half a mile above its mouth. 40
45

From the mouth of Fiume Angitola, the coast trends south-westward for about 3 miles to Pizzo and consists of a narrow sandy beach backed by high land; on this beach, about $3\frac{1}{2}$ cables south-westward of the mouth of the river, is a fish factory comprising a group of low buildings and a chimney. 50

Fishing nets.—Tunny fishing nets extend about $1\frac{1}{2}$ miles west-north-westward from a position on the coast about three-quarters of a mile south-south-westward of Torre di Mezzapraia.

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Chart 3934.

Pizzo.—Anchorage.—The town of Pizzo (*Lat. 38° 44' N., Long. 16° 10' E.*) is built on a large mass of volcanic rock, 351 feet (107^m0) high, perpendicular on its north-eastern and western sides, which
 5 stands on the coast and interrupts the long stretch of sandy beach. Marina di Pizzo is situated on the beach north-westward of the town. Northward of the town is the cathedral of San Francesco with a distinctive cupola surmounted by a square structure.

When approaching from northward or westward, the town has the
 10 appearance of a large white patch, which, on a nearer approach, widens and extends lower down on its southern side until the stretch of beach, on which is Marina di Pizzo, can be distinguished.

A breakwater, about one cable long, extends, in depths of about 10 feet (3^m0), parallel with the coast abreast Marina di Pizzo.

15 Fresh provisions and fresh water can be obtained in the town and small quantities of motor spirit and lubricants are also available there.

During fine weather, or with winds from between north-north-east and south-south-east, vessels with local knowledge can obtain anchorage westward of Marina di Pizzo, in depths of from 5½ to 11 fathoms
 20 (10^m1 to 20^m1). The bottom is hard sand and the holding ground is poor. It is dangerous to remain at this anchorage with winds from the western semi-circle.

Life-saving.—A line-throwing apparatus is maintained at Marina di Pizzo, *see page 12.*

25 **Fishing nets.**—Tunny fishing nets extend about 1½ miles north-westward from the coast in front of Marina di Pizzo.

Chart 198, plan of Port Vibo Valentia Marina.

Vibo Valentia Marina.—General remarks.—The village and harbour of Vibo Valentia Marina is situated on the shores of a small
 30 bay about 2 miles south-westward of Pizzo. The town of Vibo Valentia, which in 1941 had a population of about 10,000, is built at an elevation of 1,824 feet (556^m0), on the slopes of hills about 2½ miles south-south-westward of Vibo Valentia Marina, and may be identified by some rows and clumps of trees in its vicinity. Its dark and massive
 35 castle is prominent, but is only visible from seaward between the bearings of 180° and 225°.

The following are prominent landmarks in the vicinity :—The village of Longobardi, situated at an elevation of 656 feet (199^m9) on a hillside about one mile southward of Vibo Valentia Marina ; a light-coloured
 40 chimney, 246 feet (75^m0) in height, situated on the coast about 6 cables west-south-westward of Vibo Valentia Marina, which shows up well against a dark-green background and is prominent from every direction ; Villa Gagliardo, a two-storeyed yellow building with a red roof surmounted by a turret, situated on the beach about half a mile west-
 45 ward of the tall chimney ; and a large warehouse, surmounted by a conical turret with a flagstaff, painted in red and white, situated at the root of a mole which projects from the coast at the western end of Vibo Valentia Marina.

Pilotage.—Provided previous notice is given, an experienced local
 50 pilot will meet vessels both by day and at night ; he boards vessels from a small boat, keeping close to the head of the mole in bad weather.

Harbour.—Lights.—Buoyage.—Porto di Vibo Valentia Marina (*Lat. 38° 43' N., Long. 16° 08' E.*) is enclosed by two moles with an entrance facing eastward. Molo Foraneo extends from the coast at

Charts 3934, 1842, 1976, 1800, 1440, 2158a, 2158b, 449.

Chart 198, plan of Port Vibo Valentia Marina.

the western end of Vibo Valentia Marina in a north-easterly direction for about $2\frac{1}{2}$ cables, and is prolonged about 2 cables farther north-eastward by an arm extending north-north-eastward and east-north-eastward. In 1951, the work of extending this arm was in progress 5 and was nearing completion

Molo di Sottoflutto projects north-north-westward and north-westward for about $2\frac{1}{2}$ cables from a position on the coast about $4\frac{1}{2}$ cables eastward of the root of Molo Foraneo.

A light is exhibited at an elevation of 47 feet (14^m3), from a black 10 iron framework structure on a tank, 34 feet (10^m4) in height, situated on the head of Molo Foraneo.

A light-buoy, painted black and exhibiting a *green flashing* light every four seconds, is moored about 2 cables north-eastward of the head of Molo Foraneo and marks the extremity of the extension work on the 15 arm of the mole; vessels should not attempt to pass between the light-buoy and the arm.

A light is exhibited on Molo di Sottoflutto from a position about 2 cables from its root; vessels entering the harbour must pass more than half a cable from this light. 20

There is a warping buoy in the harbour.

The inner face of Molo Foraneo and of its extension arm is quayed and small vessels with local knowledge can berth alongside it. Owing to the submerged foundations of the head of the mole, it is dangerous to approach within a distance of about 50 feet (15^m2) of the quay abreast 25 the light-structure.

The harbour is subject to silting and periodic dredging is necessary.

Although Porto di Vibo Valentia Marina is sheltered from westerly winds, the sea rebounds from the beach at the head of the harbour, and the current coming from Stretto di Messina sets round the head 30 of the arm of Molo Foraneo and along the quay, causing inconvenience to vessels in the harbour.

Currents.—The currents follow the coastline setting from north to south; they are subject to the influence of the current from Stretto di Messina, and off the entrance to the harbour they occasionally attain 35 a rate of one knot. Vessels entering harbour will sometimes experience a west-going current even with wind and sea from between west and west-south-west.

Directions.—Vessels approaching from north-westward will usually identify the town of Pizzo from a considerable distance and should 40 steer for that town until the tall, light-coloured chimney about half a mile westward of Vibo Valentia Marina is distinguished; a little later, the dark line of Molo Foraneo will show up against a whitish beach. When the eastern end of Longobardi village bears 180° , course may be shaped for Porto di Vibo Valentia Marina. 45

Port facilities.—The Captain of the Port's office is situated at the head of the harbour, about midway between the roots of Molo Foraneo and Molo di Sottoflutto. There is a civil hospital in Vibo Valentia.

A small stock of coal is normally maintained.

Fresh water and limited supplies of fresh provisions may be obtained. 50

Minor repairs to machinery can be undertaken.

Chart 3934.

Vibo Valentia Marina to Briatico.—Coast.—Danger.—From the root of Molo Foraneo at Porto di Vibo Valentia Marina, the sandy

Charts 3934, 1842, 1976, 1800, 1440, 2158a, 2158b, 449.

Chart 3934.

coast trends westward for about 4 miles to the mouth of Fiumara Murria. Castello di Bibona (*Lat. 38° 43' N., Long. 16° 05' E.*), situated about $1\frac{1}{2}$ miles west-south-westward of the root of Molo Foraneo, is light-coloured and makes a good landmark, although mostly in ruins, with only the tower and part of the central building remaining. From seaward, the castle appears to be standing on the beach, but it is actually situated about half a mile inland, westward of a group of tall trees, which hide it on some bearings.

- 10 Torre di Rocchetta, a large, square, whitish edifice in ruins, stands on the beach about half a mile eastward of the mouth of Fiumara Murria and is fronted by some above-water rocks.

Scoglio Safò, an above-water rock, is situated about three-quarters of a mile eastward of Torre di Rocchetta, and about one cable offshore ;

- 15 it lies on a spit which, with depths of less than 6 feet (1^m8) over it, extends as much as $3\frac{1}{2}$ cables offshore north-eastward of the rock.

The village of Briatico, which in 1941 had a population of 1,300, stands on a small plateau on the coast, about 100 feet (30^m5) high with vertical sides, situated on the western bank of Fiumara Murria. It is

- 20 dominated eastward by a church with belfries surmounted by cupolas, and westward by a large, dark building partly in ruins ; the ruins of an ancient village may be seen westward of Briatico.

In fine weather vessels with local knowledge may obtain anchorage off Briatico, in depths of about $4\frac{1}{2}$ fathoms (7^m8), about $2\frac{1}{2}$ cables

- 25 offshore.

Fishing nets.—Tunny-fishing nets extend about $1\frac{1}{2}$ miles north-westward from the coast at Bivona, situated about one mile west-south-westward of the root of Molo Foraneo at Vibo Valentia Marina.

Briatico to Tropea.—Coast.—About $1\frac{1}{2}$ miles westward of the mouth of Fiumara Murria, the ruins of the circular Torre Galera stand on the flat top of a remarkable rocky spur which rises precipitously from the beach ; a prominent convent stands on the beach against the foot of this spur. Scoglio Galera, also known as Santa Arena, a rock about 8 feet (2^m4) high, lies about half a cable offshore abreast the

- 35 ruined tower.

Capo Cozzo or Zambone, about $1\frac{1}{2}$ miles west-south-westward of Torre Galera, has a rounded top and precipitous rocky sides ; there is a square rustic building near the summit. From Capo Cozzo, the coast, which consists of a wide sandy beach, trends west-south-west-

- 40 ward for about 4 miles to Tropea.

Parghelia, a village about 3 cables inland and about $1\frac{1}{2}$ miles eastward of Tropea, is built along a ridge 285 feet (86^m9) high, which slopes steeply to the sea. Its houses are uniform in size with yellowish-red roofs, and the village is dominated eastward by a church with a

- 45 grey belfry.

Tropea.—Harbour.—Light.—The town of Tropea, which in 1941 had a population of about 6,000, stands on a plateau of volcanic rock about 200 feet (61^m0) high, which rises steeply from the wide beach ; the town is partly surrounded by ancient walls. Fresh provisions

- 50 and fresh water can be obtained and there is a small civil hospital in the town.

On the beach which fronts the town are two large rocky masses, the western of which is named Isola and the eastern, San Leonardo. Isola shows a large cavern when bearing 160° , and is surmounted by a

Charts 198, 676, 165, 1976, 1800, 1440, 2158a, 2158b, 449.

Chart 3934.

chapel ; it is connected with the town by an arched viaduct which is low, and only visible from seaward when bearing about 190° . San Leonardo, rugged but flat and cultivated on top, appears isolated on the beach. The church of Michelelizza, with a cupola, is situated amongst trees eastward of the town, and is prominent. 5

There is a small harbour, sheltered by a mole which extends about $1\frac{1}{2}$ cables north-eastward from San Leonardo (*Lat.* $38^{\circ} 41' N.$, *Long.* $15^{\circ} 54' E.$). In fine weather, a few small vessels with local knowledge may secure end-on to the mole, but it is dangerous to enter or to remain in this harbour in bad weather. The bottom is sand and mud, good holding ground, but the harbour is liable to silting, and in 1947 it was reported that it had completely silted up and was unusable. 10

A light is exhibited at an elevation of 47 feet (14^m3) from a green iron framework structure on a tank, 39 feet (11^m9) in height, situated on the head of the mole. 15

Anchorage.—Vessels with local knowledge may obtain anchorage off the beach eastward of San Leonardo, in depths of about $5\frac{1}{2}$ fathoms (10^m1), about $2\frac{3}{4}$ cables offshore. In 1941, all vessels were advised not to approach the beach within a distance of $2\frac{3}{4}$ cables owing to recent silting. Although the holding ground is good, the anchorage off Tropea is untenable in bad weather and is especially dangerous with west-south-westerly and west-north-westerly winds. 20

Tropea to Capo Vaticano.—Coast.—Dangers.—From the mole at Tropea, the coast trends west-south-westward for about $2\frac{3}{4}$ miles and then south-south-westward for about $2\frac{1}{2}$ miles to Capo Vaticano ; the whole of this stretch is rocky and fronted by a narrow sandy beach. Here and there are old towers and within the coast rise well-cultivated hills dotted with small villages, of which the most prominent are San Domenico, which stands at an elevation of 348 feet (106^m1), about 2 miles south-westward of Tropea light-structure and about a quarter of a mile inland, and Ciaramiti, situated at an elevation of 823 feet (250^m8) about one mile south-south-westward of San Domenico. A church with an arched belfry stands in an isolated position close westward of San Domenico, and there is a church with a belfry surmounted by a cupola in Ciaramiti. 30

Torre Bali, almost a total ruin, stands on a coastal ridge close to a small house about $2\frac{1}{4}$ miles south-westward of Tropea light-structure ; it is difficult to distinguish from seaward, but a yellow castellated building surmounted by a small tower stands behind Torre Bali and is a good landmark. 40

Torre Marino, a large red square building with a small tower on either side of it, and an arched opening in front, stands on a coastal hill about 8 cables south-westward of Torre Bali.

Le Formiche are some low blackish rocks, lying about half a cable offshore about midway between Torre Bali and Torre Marino. 45

Torre Aruffa, a square building with its eastern side in ruins, stands on a hill about 8 cables south-south-westward of Torre Marino. Scoglio Tamanica, a small blackish rock, lies close inshore abreast Torre Aruffa and shows up well against the light-coloured beach. 50

Scoglio Vàdera, a small low rock of a blackish colour, surrounded by deep water, lies about $3\frac{1}{4}$ cables offshore about half a mile west-south-westward of Torre Aruffa and about one mile northward of Capo Vaticano.

Charts 1842, 1976, 198, 676, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 3934.

Capo Vaticano.—Danger.—Light.—Capo Vaticano is rocky, steep and rugged ; its sides are furrowed by water-courses which are crossed by bridges, some constructed of iron and some of stone. It is one of
 5 the most remarkable headlands on the Italian coast, and may be identified by the prominent buildings of the light-structure and a dis-used signal station, which stand on its flattish top.

Scoglio Mantineo (*Lat. 38° 37' N., Long. 15° 50' E.*) lies about
 10 $1\frac{1}{4}$ cables offshore westward of the extremity of Capo Vaticano.

A light is exhibited, at an elevation of 354 feet (107^m9), from a white circular tower on a white one-storeyed building, 26 feet (7^m9) in height, situated on Capo Vaticano.

Charts 3934 and 3935.

GOLFO DI GIOIA.—Golfo di Gioia is entered between Capo
 15 Vaticano and Capo Paci, about $22\frac{3}{4}$ miles south-south-westward ; the depths are great close up to its shores. The gulf is fully exposed to west-north-westerly and west-south-westerly winds and has no harbours of refuge and affords no shelter.

Its northern and southern shores are mountainous whilst at its head
 20 is a low sandy beach intersected by numerous water-courses. Several towns and villages are scattered along the shores of the gulf and on the neighbouring heights.

Tidal streams.—The inshore streams of Golfo di Gioia depend on those of Stretto di Messina and change as they change. The stream
 25 sets north-north-eastward with a rising tide, and south-eastward with a falling tide. The streams attain a rate of from 2 to 3 knots near Stretto di Messina and gradually decrease towards the northern part.

Along the coast between Capo Vaticano and Punta Pezzo, on the eastern shore of Stretto di Messina, one hour after the beginning of
 30 the north-going stream a counter stream, called Bastardo della Montante, begins, which is hardly felt off Capo Vaticano, where a permanent north-west-going current, with a rate of less than half a knot, overpowers it ; but it reaches its maximum width of about half a mile from the coast, between Torre Cavallo and Punta Pezzo, where it sometimes
 35 attains a rate of 3 knots. This counter stream, whose phases conform to those of the main stream, does not make during the falling tide. It is liable to irregularities during strong winds from between south-west and north-west, on account of which caution is necessary when approaching the coast in a sailing vessel, with fresh winds between
 40 south and west, or when bad weather is expected from that quarter. Such winds usually fall light off the mouth of the strait so that if the stream then be foul for the vessel to fetch either the anchorage of Torre Cavallo or Scilla, she risks being set on a lee-shore. As soon as the weather moderates, the streams resume their normal directions.

45 During the summer, with fine weather, this counter stream does not run at neap tides.

Chart 3934.

Capo Vaticano to Marina di Nicotera.—Coast.—Dangers.—From Capo Vaticano, the coast trends south-eastward for about three-
 50 quarters of a mile to a rocky spur surmounted by the ruined Torre della Madonna della Guardia ; between this tower and Capo Vaticano is a slight bight which is encumbered with rocks. Secca del Monaco is situated in the middle of this bight, about $2\frac{3}{4}$ cables offshore. Be-

Charts 1976, 198, 165, 676, 1800, 1440, 2158a, 2158b, 449.

Chart 3934.

tween Torre della Madonna della Guardia and Punta del Fortino di Santa Maria, about 6 cables south-eastward, is another bight, at the head of which is a sandy beach off which good anchorage may be obtained by vessels with local knowledge; a few houses, dominated by the small chapel of Santa Maria, lie stretched along the sandy beach. Punta del Fortino di Santa Maria may be identified by a ridge of above-water rocks extending about $1\frac{1}{2}$ cables south-westward of the point and terminating in Scoglio Galia; there is a narrow channel with depths in it of from 3 to 5 fathoms (5^m5 to 9^m1) between Scoglio Galia and the next rock of the ridge.

South-eastward of Punta del Fortino di Santa Maria is a narrow beach, at the extremity of which is Grotta del Forno, a cave with a sandy beach; on the south-eastern side of the grotto, the beach becomes stony. The deep and narrow mouth of a water-course crossed by a stone bridge may be seen about 4 cables south-eastward of Punta del Fortino di Santa Maria. The beach ends about 2 cables south-eastward of the stone bridge, and for about $1\frac{1}{4}$ miles farther south-eastward the coast consists of cliffs backed by the steep stony and sandy slopes of Monte Petto della Torre, which attains an elevation of 1,519 feet (463^m0) about $1\frac{1}{4}$ miles south-eastward of Punta del Fortino di Santa Maria and about 4 cables inland.

Monte Poro (*Lat.* $38^\circ 36' N.$, *Long.* $15^\circ 55' E.$), 2,323 feet (708^m0) high, is situated about $1\frac{1}{4}$ miles east-north-eastward of Monte Petto della Torre, and Monte La Piana rises to an elevation of 951 feet (289^m9) about 2 miles south-south-eastward of Monte Poro. Torre di Ioppolo, a circular tower, the upper part of which is broken away, stands on a rugged cliff at the end of a spur of Monte La Piana, about one mile west-south-westward of the summit of that mountain and about $3\frac{1}{4}$ miles south-eastward of Punta del Fortino di Santa Maria; two houses stand close north-eastward of the tower. This part of the coast consists of a stony beach and is free from dangers. The steep slopes in the vicinity of Monte Petto della Torre become less pronounced on proceeding south-eastward and the coast becomes more accessible as the mountains recede inland and the ground rises less steeply; the vegetation in this vicinity is sparse.

Close north-westward of Torre di Ioppolo are two whitish cliffs near the beach, and between them is a bridge constructed partly of iron and partly of stone.

Between Torre di Ioppolo and Marina di Nicotera, about 2 miles south-eastward, the coast is precipitous, bare and stony. On this stretch are several narrow tracts of stony beach which become less frequent as Marina di Nicotera is approached.

Nicotera.—Anchorage.—The town of Nicotera, which in 1941 had a population of about 4,000, is situated at an elevation of 686 feet (209^m1), about 2 miles east-south-eastward of Torre di Ioppolo and about 3 cables inland. It is prominent from seaward and may be identified by a distinctive large house with arches in the town. In a prominent isolated position north-westward of the town is the chapel of Madonna della Scala, partly in ruins.

Marina di Nicotera is a village situated on a stretch of beach south-south-westward of the town of Nicotera; the red roofs of new buildings in the village show up between the old buildings, especially the roof of a large, low building near the northern end of the village, and a metal

Chart 3934.

chimney on a large house near the southern end of the village is also prominent. Moderate quantities of fresh provisions are available.

The anchorage off Marina di Nicotera is the worst on this part of the coast because sailing vessels caught here by a sudden shift of wind westward are embayed and unable to beat out to sea and must ride it out at anchor.

The best anchorage berth is in depths of from 19 to 22 fathoms (34^m7 to 40^m2), with Nicotera white railway station bearing 056° and in line with Nicotera church, and Capo Vaticano light-structure just open south-westward of Torre di Ioppolo. The railway station is situated in an isolated position half-way up the hill between Nicotera and Marina di Nicotera, and may be identified by two water tanks, one on either side of it, and by a group of white two-storeyed houses a few hundred yards westward of it. The church may be identified by its dark square belfry and, when in line with the station, appears to stand on the summit of the conical hill on which the town is built. This anchorage berth is not recommended for large vessels, being only a short distance offshore, and the depths inshore decrease rapidly; according to local reports, however, a vessel may safely ride out bad weather in it.

Vessels with local knowledge may also anchor farther southward, in depths of from 8 to 11 fathoms (14^m6 to 20^m1), sand, about 2½ cables offshore, with the metal chimney near the southern end of the village bearing 090°; inshore of this berth the depths also decrease very rapidly.

Nicotera to Gioia Tauro.—Coast.—Between the towns of Nicotera and Gioia Tauro (*Lat. 38° 26' N., Long. 15° 54' E.*), about 7½ miles south-south-westward, the character of the coastal country changes completely. The mountains recede from the coast, giving place to wide beaches of very light-coloured sand backed by plains, and by the gently undulating country of the wide valleys of Fiume Mesima and Fiume Petrace.

A sandy beach extends about 7½ miles south-south-westward, from abreast Marina di Nicotera to the mouth of Fiume Petrace; it is free from dangers and may be safely approached to within a short distance, except abreast the small town of San Ferdinando about midway along this stretch, where the shorebank, with depths of less than 3 fathoms (5^m5) over it, extends as much as 4 cables offshore.

Fiume Mammella and Fiume Mesima enter the sea through a common mouth which is low and whitish and situated about 2½ miles south-south-westward of Marina di Nicotera; on the coast about 1½ miles southward of the mouth will be seen the whitish buildings of San Ferdinando. The hills eastward of Nicotera are covered by forests, and there is a forest belt along the valleys of the above-mentioned rivers which is visible from a considerable distance. The country southward of these rivers as far as San Ferdinando is also wooded, but not so densely as farther northward.

San Ferdinando, also known as Casette, had a population of about 3,500 in 1941; it may be identified by the square belfry of its principal church which faces seaward and overlooks the low houses of the town. Another church stands on the beach southward of the town and is visible from a distance of about 6 miles.

The town of Rosarno stands at an elevation of 200 feet (61^m0) at the

Charts 1976, 198, 165, 676, 1800, 1440, 2158a, 2158b, 449.

Chart 3934.

western end of an isolated hill on the southern bank of Fiume Mesima, about $2\frac{3}{4}$ miles east-south-eastward of its mouth. It is visible from a considerable distance but when within about 2 miles of the coast is masked by trees except when bearing about 085° and in line with San Ferdinando. A dark and slender belfry rises from among its buildings. 5

Charts 3934 and 3935.

Gioia Tauro.—Anchorage.—The town of Gioia Tauro, which in 1941 had a population of about 8,000, is situated on a large plain about $3\frac{1}{2}$ miles south-south-westward of San Ferdinando and about three-quarters of a mile inland. The suburbs extend to the coast and the town is visible from a considerable distance seaward, except when within about 2 miles of the coast, when it is masked by trees except from northward and southward. Among the buildings in the town is a church with a square yellow belfry, and on the beach abreast the town are the chimneys of several factories which serve to identify the locality. 10 15

During fine weather, vessels with local knowledge anchor close inshore. The shorebank fronting the beach, on which there are depths of from 7 to 10 feet (2^m 1 to 3^m 0), extends over a quarter of a cable 20 offshore, and there are depths of about $6\frac{1}{2}$ fathoms (11^m 9) about $1\frac{3}{4}$ cables offshore. A convenient berth is with the southernmost of the factory chimneys on the beach bearing 165° . It is dangerous to remain in the roadstead with winds from the western semi-circle.

There is a mooring buoy in the roadstead; it is liable to be washed away in bad weather. 25

Life-saving.—A line-throwing apparatus is maintained at Gioia Tauro, *see* page 12.

Gioia Tauro to Capo Barbi.—Coast.—Fiume Petrace enters the sea about one mile south-westward of Gioia Tauro; its mouth may be identified by the thick belts of trees which line its banks, and by an iron bridge with masonry arches at each end, which is visible from seaward. A strong discoloration of the water due to deposit brought down by the river may sometimes be seen off the mouth of Fiume Petrace, even at a considerable distance offshore. 30 35

Southward of Fiume Petrace, the mountains again approach the coast, and the slopes of Monte Terzo, 614 feet (187^m 1) high, situated about $1\frac{1}{2}$ miles southward of the mouth of the river, joining with the terraced slopes of Monte Sant' Elia (*Lat.* $38^\circ 21' N.$, *Long.* $15^\circ 51' E.$), 1,900 feet (579^m 1) high, about $3\frac{3}{4}$ miles south-south-westward of Monte Terzo, give this part of the coast a distinctive appearance by which it may be recognised from a considerable distance. Southward of the mouth of Fiume Petrace, the beach becomes gradually narrower and terminates at Pietre Nere, a group of blackish rocks at the foot of a rocky spur about $1\frac{1}{2}$ miles south-south-westward of the river mouth. 40 45 Torre di Pietre Nere o dei Saraceni, a tall, light-coloured circular tower, stands on the rocky spur, and is prominent when seen from either north-westward or south-westward. When viewed from westward, however, it does not show up well against the green vegetation behind it. An above-water, blackish rock, which is trapezoidal in shape when seen from northward, lies close off the rocky spur; it is connected with the coast by a ridge of rocks, one of which is above-water. 50

The beach, which here is narrow and strewn with rocks, is broken

Charts 1976, 198, 165, 676, 1800, 1440, 2158a, 2158b, 449.

Charts 3934 and 3935.

about 2 cables southward of Torre di Pietre Nere by another rocky spur, whence it curves to Capo Triari, about $1\frac{1}{2}$ miles south-south-westward of Torre di Pietre Nere, and forms a cove with a beach some-
5 what wider and fringed with rocks. A few red-roofed houses stand on this beach, which is backed by terraced hills of moderate elevation.

Capo Triari is a precipitous rocky spur from which a reef extends about a quarter of a cable and terminates in Scoglio Agliastro, which is only visible from a short distance. Southward of Capo Triari, the
10 coast is steep and covered with vineyards, which form the main cultivation, although there are some olive groves on the tops of the hills which, in places, extend to the coast.

Capo Barbi lies about $1\frac{1}{2}$ miles south-westward of Capo Triari; it is backed by cliffs which southward become precipitous and more and
15 more reveal their rocky nature, until they overhang at the northern end of Marina di Palmi, about $3\frac{1}{2}$ cables southward of Capo Barbi. There are no real beaches between Capo Triari and Capo Barbi, but the coast, although rocky, is accessible and, except for some small rocks close inshore, is free from dangers.

20 Chart 3935.

Palmi.—Anchorage.—The town of Palmi, which in 1941 had a population of about 18,000, is situated at an elevation of 810 feet (249^m9), about 4 cables eastward of Capo Barbi. Marina di Palmi lies at the head of a small cove situated west-south-westward of the
25 town, and is bounded northward by the bare rugged cliffs of Capo Barbi, and southward by the steep rocky slopes of Monte Sant' Elia. This mountain, when viewed from north-north-westward, appears as a compact mass with a rounded outline covered with sparse vegetation. There is a red building in front of a clump of trees on its
30 summit, and high up on its south-eastern slopes are two other dense clumps of trees which stand out against the skyline when seen from southward. In the more elevated parts of Palmi, the red roofs of the buildings form a patch of bright red colour which contrasts with the dark-green of the surrounding vegetation. At the south-eastern
35 extremity of the town is a long, dark wall in front of which stands a white church with no belfry.

Vessels with local knowledge may obtain temporary anchorage, in depths of about 11 fathoms (20^m1), on a sandy patch off the northern part of the cove fronting Marina di Palmi; the bottom around the
40 sandy patch is rocky and unfit for anchoring. The sides of the cove are steep and rocky but at its head is a small stony beach.

Capo Barbi to Bagnara Calabria.—Coast.—From Capo Barbi (Lat. $38^{\circ} 21' N.$, Long. $15^{\circ} 50' E.$) the coast trends south-south-westward for about $4\frac{1}{2}$ miles to Bagnara Calabria, and is high, precipitous
45 and free from dangers. It is inaccessible except at a few points, such as Scoglio Galera, about $1\frac{1}{2}$ miles southward of Capo Barbi, and other places, described below. The coastal slopes, even the most precipitous, are cultivated with vineyards in terraces, and on the heights plantations of olives and chestnuts extend as far as Reggio Calabria
50 (page 466). The chestnut groves are visible from off Bagnara Calabria and the coast farther southward; they frequently cover the hillsides down to the vineyards, which increase in extent near Bagnara Calabria.

Cala Sorrentina has a small beach at the end of a rocky spur which extends westward from the coast about $1\frac{3}{4}$ miles southward of Capo

Charts 1976, 198, 165, 676, 1800, 1440, 2158a, 2158b, 449.

Chart 3935.

Barbi. Two small coves with sandy beaches on which landing from boats is easy are situated between Cala Sorrentina and Marina di Torre Rosci, about 2 miles south-south-westward; the northern is Cala or Marina di San Leone, about a quarter of a mile southward of 5
Cala Sorrentina. Cala Iancuia, the other cove, is larger and lies about half a mile farther south-south-westward, being bounded southward by the precipitous sides of Monte Alto, a mountain which may be identified by its sharp peak and by a landslip on its seaward side. On the northern side of Cala Iancuia and near the coast is a rock close 10
off which is a rocky shoal, but the southern part of the cove is deep and small vessels may enter it in safety. Both coves afford temporary shelter to vessels with local knowledge.

High up on the face of a cliff close northward of Cala Iancuia is the mouth of a grotto which can be seen from some distance south- 15
westward.

Punta di Gramà, at the extremity of the precipitous sides of Monte Alto, is situated about three-quarters of a mile south-south-westward of Cala Iancuia; from this point, a sandy beach extends south-south-westward for about one mile to Bagnara Calabria, being interrupted at 20
about the middle by Torre Rosci, dark, circular and with the upper part broken away. This tower is prominent when viewed from south-westward but is not easily distinguished from its background when viewed from north-westward.

The village of Pellegrina stands on a hill about half a mile eastward 25
of Torre Rosci and may be identified by the white cupola of a church with a red roof and a belfry surmounted by a smaller white cupola, situated at the north-eastern end of the village.

Chart 177.

Bagnara Calabria.—Anchorage.—The town of Bagnara Calabria, 30
which in 1941 had a population of about 8,000, is built partly on the moderately steep slopes of a spur, and partly on a beach at the foot of the spur, close north-eastward of the mouth of Torrente Fiumara. The mouth of this river may be identified by a small red house standing by itself half-way up a slope on the north-eastern bank; the river 35
has a narrow and tortuous course, and is crossed near its mouth by a masonry bridge with three arches and by an iron bridge on pillars.

The spur on which the town is partly built projects slightly from the adjoining coast; at the extremity of this projection, which is named 40
Scoglio Martorana, is a red house which serves as a fishing observatory during the swordfish fishing season. The beach at the foot of Scoglio Martorana is of sand and stones and may be approached within a short distance.

Anchorage off Bagnara Calabria is insecure and exposed to the strong 45
currents of Stretto di Messina. In fine weather, small sailing vessels with local knowledge anchor off the town in depths of about $6\frac{1}{2}$ fathoms (11^m9), sand. Large vessels anchor farther off the coast between Scoglio Martorana and the mouth of Torrente Fiumara (*Lat.* $38^{\circ} 19' N.$, *Long.* $15^{\circ} 48' E.$). 50

Submarine cables.—Beacons.—Submarine telegraph cables are landed on the coast about a quarter of a cable south-westward of the mouth of Torrente Fiumara.

Anchoring and fishing are prohibited in an area off the coast extend-

Charts 3935, 188, 1976, 198, 165, 676, 1800, 1440, 2158a, 2158b, 449.

Chart 177.

ing about half a cable on either side of the landing place; the boundaries of this area are indicated by beacons surmounted by a green sphere inscribed with the letter **T**.

- 5 **Bagnara Calabra to Scilla.—Coast.**—From the mouth of Torrente Fiumara, the coast trends west-south-westward for about $4\frac{1}{2}$ miles to Castello di Scilla. Between the mouths of Torrente Fiumara and Torrente Favazzina, about $2\frac{1}{4}$ miles south-westward, the coast consists of a narrow beach backed by the slopes of Piano della Chiusa; a
10 whitish railway embankment runs parallel with, and close within the beach, and may from a distance be confused with it. About half a mile south-westward of the mouth of Torrente Favazzina, the coast becomes steep and rocky and is backed by terraces which gradually increase in elevation to a spur which terminates in a cliff named Scilla,
15 about 2 miles westward of Torrente Favazzina, on which is a castle.

The summits of the coastal hills along the stretch between Bagnara Calabra and Scilla are covered with chestnut trees except for some bare patches between Torrente Fiumara and Torrente Favazzina; westward of the latter river, the lower slopes are covered with vineyards.

- 20 The village of Favazzina stands close south-westward of the river of that name which flows through a narrow valley; there is a prominent chimney in the village.

- Scilla.—Dangers.—Lights.**—The town of Scilla, which in 1941 had a population of about 4,600, is divided into three parts; San
25 Giorgio, the largest part, is also the highest, and stands at an elevation of 240 feet (73^m1).

- Between the rocky spur on which is the castle, and Capo Paci, about 6 cables west-south-westward, is a bight at the head of which is Marina Grande di Scilla, a sandy beach on which is another part of the town; at the western end of the bight is a bridge with nine arches.
30

- On the eastern side of the rocky spur, the stretch of coast abreast the castle is named Marina della Chianalea and is fringed with blackish rocks which are prominent; La Chiana, a rocky shoal with depths of one fathom (1^m8) over it, lies about half a cable offshore abreast
35 Marina della Chianalea. At the south-eastern end of Marina della Chianalea, is a tract of gravel beach named Marina dello Oliveto.

Pietra Vuolia, a flat rock only just above water, lies about $3\frac{1}{2}$ cables eastward of Castello di Scilla and about one cable offshore.

- A small mole extends about 300 feet (91^m4) north-eastward from the
40 coast of Marina della Chianalea; it is quayed on its south-eastern side, with depths alongside the quay of from one to $2\frac{1}{4}$ fathoms (1^m8 to 4^m1), and affords shelter to small local craft and fishing boats. It is dangerous to approach the mole during west-south-westerly winds.

- The mole is being extended about 164 feet (50^m0) in an easterly
45 direction; in November 1950, about 50 feet (15^m2) of this extension had been completed. Vessels should give the light-structure on the mole, *see* below, a berth of at least 55 yards (50^m3).

- A light is exhibited, at an elevation of 235 feet (71^m6) from a grey circular concrete tower, 18 feet (5^m5) in height, situated on Castello
50 di Scilla.

A light is exhibited, at an elevation of 33 feet (10^m1), from a grey square cement hut, 21 feet (6^m4) in height, situated on the head of the mole.

Anchorage.—Vessels with local knowledge may obtain anchorage

Charts 3935, 188, 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 177.

off Marina Grande di Scilla (*Lat. 38° 15' N., Long. 15° 43' E.*), in depths of about 5 fathoms (9^m1), sand and good holding ground, about 1½ cables offshore. The anchorage is exposed to the strong currents from Stretto di Messina and is dangerous during strong onshore winds. 5
Temporary fine weather anchorage may be obtained at from 1½ to 2 cables offshore eastward of the castle, in depths of from 15 to 16 fathoms (27^m4 to 29^m3), with the northern extremity of the rocky spur bearing 270°, but this anchorage is not recommended.

Charts 177, 3935.

10

STRETTO DI MESSINA.—General remarks.—Pilotage.—

This strait, which is very deep and is free from off-lying dangers, separates the island of Sicily from the coast of Italy. It is narrowest near its northern end where, between Torre Cavallo (page 462) and Capo Peloro, it is about 1½ miles wide. At its southern end, between 15
Punta Pellaro (page 466) and Capo Scaletta, it is about 7½ miles wide. See view on chart 188.

The currents and whirlpools famous from antiquity, see page 470, are such as to necessitate some caution in navigating the strait; moreover, in the vicinity of the high land on either side, vessels are exposed 20
to violent squalls which descend through the valleys with much violence.

There is a station for authorised pilots at Messina only, see page 463; local pilots for the strait can be obtained at Faro, close westward of Capo Peloro, but they are not authorised to take vessels into Porto di Messina. The Messina pilots will, if required, pilot north-bound 25
vessels as far as the vicinity of Bagnara Calabria (page 459) and south-going vessels as far as the line joining Punta Pellaro and Capo Scaletta.

Messina pilots carry out service at night and in any weather. The pilot boats carry a blue flag with a white vertical stripe in which is the letter P. Previous notice requesting a pilot is not required. 30

Fishing is practised to a considerable extent all the year round along the shores of Stretto di Messina, both by day and at night, but fishing with fixed nets, being carried out close inshore, does not interfere with navigation.

The eastern coast of Sicily, which forms the western side of Stretto di 35
Messina, is fully described in Mediterranean Pilot, Volume I, and only the most important features are, for the convenience of mariners, mentioned in this volume.

Submarine cables.—Beacons.—Submarine telegraph cables are landed on the eastern shore of Stretto di Messina at the following 40
positions:—About 9 cables, and about 1½ miles, respectively, southward of the root of the mole at Villa San Giovanni (page 463); about half a mile, and about three-quarters of a mile, respectively, southward of the mouth of Fiumara di Catona (page 464); about three-quarters of a mile southward of the root of the mole at Reggio Calabria (page 466); 45
and about 9 cables southward of Punta Calamizzi (page 466).

Anchoring and fishing are prohibited off the coast in areas extending about half a cable on either side of the landing positions of the cables; the boundaries of these areas are indicated by beacons surmounted by a green sphere inscribed with the letter T. 50

Chart 177.

NORTHERN PART OF STRETTO DI MESSINA.—Entrance.—Lights.—Signal station.—The northern entrance to

Charts 3935, 188, 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 177.

Stretto di Messina lies between Capo Paci and Capo Peloro, a low and sandy cape which forms the north-eastern extremity of Sicily, about $2\frac{1}{2}$ miles west-north-westward. See view facing page 476.

- 5 A light is exhibited, at an elevation of 121 feet (36^m9), from an octagonal tower, painted in black and white horizontal bands, on a white dwelling, 128 feet (39^m0) in height, situated near the extremity of Capo Peloro. An auxiliary light is exhibited, at an elevation of 74 feet (22^m6) from the light-structure, but it is not visible from the strait.

A light is exhibited at an elevation of 30 feet (9^m1), from an iron structure on a grey circular iron hut, 25 feet (7^m6) in height, situated on Punta Sottile, about $1\frac{1}{2}$ cables south-south-westward of Capo Peloro light-structure.

- 15 A signal station, consisting of a circular turret, is situated in Forte Spuria (*Lat.* $38^\circ 16' N.$, *Long.* $15^\circ 38' E.$), about $1\frac{1}{2}$ miles westward of Capo Peloro; it is not plainly visible from eastward, being situated on a thickly-wooded hill. Storm signals are displayed, see page 11.

Eastern shore. — Lights. — Anchorage. — Between Capo Paci

- 20 and Punta Pezzo, about $3\frac{1}{2}$ miles west-south-westward, the eastern side of Stretto di Messina consists of a steep and narrow beach, intersected by the mouths of various torrents and backed by hills and a cultivated plateau. Near Punta Pezzo, the vegetation becomes more luxuriant and the cultivation more intensive.

- 25 Between Capo Paci and Torre Cavello, about $1\frac{1}{2}$ miles west-south-westward, is the narrow sandy beach of San Gregorio on which may be distinguished a bridge, the mouth of a tunnel, and some small white houses; a rock, plainly visible from seaward, lies close off the middle of this beach.

- 30 Torre Cavello stands half-way up a hill; it is circular and partly demolished but is still prominent. On its western side is a long, crenellated wall, with arches, and in front of it is a stone embankment, also with arches, supporting the road. On the south-western extremity of the slope on which the tower stands are the prominent ruins of

- 35 Castello di Alta Fiumara or Fortino Garibaldi, among which is a wall, painted red. The hamlet of Porticello consisting of a few huts is situated on the south-western side of the mouth of Fiumara di Santa Trara (Alta Fiumara) which enters the sea through Marina di Porticello, about half a mile south-westward of Torre Cavello.

- 40 Vessels with local knowledge may obtain anchorage, in depths of about 16 fathoms (29^m3), about $1\frac{3}{4}$ cables off the mouth of Fiumara di Santa Trara. This is the best anchorage for large vessels. Small vessels can anchor closer inshore, in depths of 11 fathoms (20^m1), sand and weed, good holding ground. This anchorage is sheltered
- 45 from winds from east-north-east through south to west-south-west, but is untenable with northerly winds.

- The town of Cannitello, which in 1941 had a population of about 2,500, lies stretched along the coast about $2\frac{1}{2}$ miles south-westward of Capo Paci. It consists of a long line of houses, behind which and
- 50 half-way up the hillside is the white wall of a prominent cemetery. Fiumara Zagarella flows into the sea close eastward of Cannitello, and a little above its mouth and on top of the coastal slope is a village of the same name.

Punta Pezzo, also called Coda di Volpe, is wide, flattish, low and

Charts 188, 3935, 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 177.

sandy. It projects westward from the foot of a hill on which stand the villages of Pezzo Superiore and Piale, the latter being situated about three-quarters of a mile south-eastward of the point. At Punta Pezzo, the eastern shore of the strait turns and trends southward for about three-quarters of a mile to the entrance to Porto di Villa San Giovanni. 5

A light is exhibited, at an elevation of 46 feet (14^m0), from an iron framework structure on a white cylindrical base, 46 feet (14^m0) in height, situated among trees about one cable eastward of Punta Pezzo. 10
See view facing page 476.

Western shore.—Lights.—From Punta Sottile, the coast forming the western side of Stretto di Messina trends south-westward for about 5½ miles to Punta Secca, the north-eastern extremity of Braccio di San Raineri, a peninsula which forms the eastern side of Porto di Messina. 15
Chart 177, plan of Messina harbour.

A light is exhibited, at an elevation of 43 feet (13^m1), from a small iron framework structure on a square tower, painted in red and white horizontal bands, 39 feet (11^m9) in height, situated on Punta Secca. 20
See view facing page 476.

A light is exhibited, at an elevation of 136 feet (41^m4), from an octagonal turret, painted in black and white horizontal bands, surmounting a grey, square tower, 139 feet (42^m4) in height, situated on Punta San Raineri (*Lat. 38° 12' N., Long. 15° 35' E.*), about a quarter of a mile south-south-eastward of Punta Secca. *See view facing* 25
page 476.

Porto di Messina, a secure harbour which is accessible to vessels not exceeding 656 feet (199^m9) in length and 29½ feet (9^m0) in draught, is entered about half a mile westward of Punta Secca. A full description of the port will be found in *Mediterranean Pilot, Volume I.* 30
Chart 177.

Eastern shore.—Villa San Giovanni.—Pilotage.—This town, which had a population of about 10,000 in 1941, is situated about three-quarters of a mile southward of Punta Pezzo. A factory with a tall chimney, situated on a hill northward of the town; and a long, 35
low factory painted red, situated close to the coast, behind which is another tall chimney, are prominent from seaward. The cathedral, which has a façade with three large arches flanked by two square towers, is situated in the centre of the town.

There is a narrow sandy beach abreast the town, which, on account 40
of the strong current, is protected from erosion by numerous groynes.

Pilotage is compulsory for vessels entering the harbour. There is an authorised pilot who carries out the duties of berthing master and who normally boards vessels at the harbour entrance.

Harbour.—Lights.—The harbour is protected by a mole extending 45
1,024 feet (312^m1) north-north-westward from the coast abreast the southern end of the town; its inner side is completely quayed. At the southern end of the harbour are two special ferry basins, the western of which is connected with the mole by a concrete quayed arm. There are depths of 25 feet (7^m6) alongside the outer part of the mole, decreasing 50
to 16 feet (4^m9) at the root and alongside the quay connecting it with the western ferry basin.

A light is exhibited, at an elevation of 38 feet (11^m6), from a small stone tower, 26 feet (7^m9) in height, situated on the head of the mole.

Charts 3935, 188, 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 177.

A light is exhibited on each side of the entrance to the ferry basins.

The eastern side of the harbour is faced with a quay, but owing to the narrow width of the harbour and the necessity for keeping the mole and the approaches to the ferry basins clear for the movements of the ferries, access to the harbour is restricted to small craft of light draught which can berth alongside the eastern quay.

Port facilities.—Fresh provisions are available and fresh water may be obtained.

10 There is a small hospital in the town.

An Italian Government ferry service maintains regular communication between Villa San Giovanni and Porto di Messina.

Coast.—**Buoy.**—Between the root of the mole at Villa San Giovanni and the mouth of Fiumara di Catona, about 2 miles southward, the coast consists of a narrow sandy beach within which the land is green, well-cultivated and dotted with numerous houses. It is backed by gentle slopes which descend from the mountains of the interior, having between them and the coast a stretch of undulating country. The village of Acciarello, which stands with its houses spread along the coast close southward of Villa San Giovanni, appears as a continuation of that town.

A can buoy is moored about $3\frac{1}{2}$ cables south-south-westward of the head of the mole at Villa San Giovanni.

The town of Catona (*Lat. $38^{\circ} 11' N.$, Long. $15^{\circ} 39' E.$*), which in 1941 had a population of about 4,500, lies on the southern side of the mouth of Fiumara di Catona. A church with a yellow spire may be seen rising above the houses in the town, and in an elevated position close southward of the town is another church with five pinnacles, the central and largest of which is painted white. Half-way up a hill behind the town is a cemetery.

Chart 3935.

SOUTHERN PART OF STRETTO DI MESSINA. — **Coast.** —

Lights.—**Anchorage.**—From Punta San Raineri, the western side of the strait trends south-south-westward for about 10 miles to Capo Scaletta, the south-western entrance point. This stretch of coast is steep-to, sandy and nearly straight. It is backed at about 3 miles inland by a range of mountains running roughly parallel with the coast.

On the eastern side of the strait, between the mouth of Fiumara di Catona and that of Fiumara di Gallico, about one mile southward, the ground gradually rises to a high terrace; both these rivers flow through wide and flattish valleys and from the mouth of the latter river a well-cultivated plain extends about 4 miles east-south-eastward to the lower slopes of Monte Orti, 2,447 feet (746^m0) high.

The town of Gallico, which in 1941 had a population of about 5,200, is situated close southward of the mouth of Fiumara di Gallico. There is a long row of houses on the beach which stands out prominently when seen from north-north-westward. Behind the town is a church with a red roof and low, square belfry, and about $1\frac{1}{2}$ cables north-eastward of the town are three groups of three-storeyed houses, dark red in colour with flat roofs, which stand out from the surrounding vegetation. A breakwater protects the middle of a beach which fronts the town.

The swift-flowing Fiumara di Pietro dell' Agida enters the strait about one mile south-eastward of Gallico. Southward of its mouth,

Charts 3935, 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 3935.

the sandy beach gradually narrows and gives way to a cliff which, near its southern end, is reinforced by a sea wall. The town of Archi, with a population of about 3,300 in 1941, is situated at an elevation of 86 feet (26^m2) about 1½ miles southward of Gallico and a short distance 5 inland.

A long, high and light-coloured wall is situated close southward of Archi. About 1¼ cables north-westward of this wall is a small point which separates two bights, that of Gallico being on its northern side, and that of Pentimele on its southern side. Torrente Torbido enters 10 the strait at the small point, and from its mouth the coast trends about one mile southward to the entrance to Porto di Reggio Calabria.

A light is exhibited, at an elevation of 44 feet (13^m4), from a black wooden framework structure on a black wooden hut, 33 feet (10^m1) 15 in height, situated close within the molehead at the western entrance point of Porto di Reggio Calabria (*Lat. 38° 07' N., Long. 15° 39' E.*).

A light is exhibited, at an elevation of 26 feet (7^m9), from a red iron framework structure on a red iron hut, 23 feet (7^m0) in height, situated at the eastern entrance point of Porto di Reggio Calabria, about one cable east-north-eastward of the molehead.

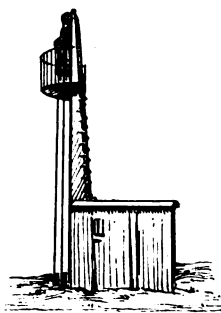
The town and harbour of Reggio Calabria are described on page 467.

The area fronting the coast between the mouth of Torrente Torbido and the entrance to Porto di Reggio Calabria is known as Rada di Pentimele and affords one of the safest anchorages in the strait as the bottom is good holding ground, the currents are less violent, and south-westerly winds are moderate there. Gallico anchorage, situated on the northern side of the mouth of 30 Torrente Torbido, is tenable only in moderate winds and is not recommended.

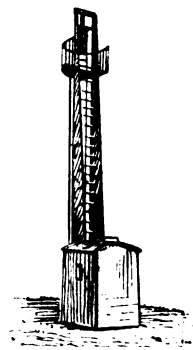
Rada di Pentimele may be easily identified 35 by Colle di Pentimele, a hill close eastward of it. On the summit of this hill is a small white tower rising from the ruins of an old fort, and at the foot of which is a two-storeyed custom house, painted bright-red with a square tower 40 of the same colour. The tall chimney of a brickworks is situated northward of the custom house, and a block of yellow buildings with flat roofs is situated on the northern bank of Torrente Montevergine, about a quarter of a 45 mile on the southern side of the custom house; Torrente Montevergine is often dry and then

resembles a stony road. Pontile della Sanità, a wooden pier with a depth of 5 feet (1^m5) alongside its head, projects about 200 feet (61^m0) from the shore of Rada di Pentimele abreast the block of yellow 50 buildings.

Vessels may obtain anchorage, in depths of about 27 fathoms (49^m4), about 2¼ cables offshore, or in depths of about 25 fathoms (45^m7), with the light-structure on the molehead at Porto di Reggio Calabria



Eastern light-structure.



Molehead light-structure.

Charts 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 3935.

bearing 200° , distant $6\frac{1}{2}$ cables. Lesser depths are found towards the mouth of Torrente Torbido.

Porto di Reggio Calabria to Punta Pellaro.—Coast.—From
5 the root of the mole at Porto di Reggio Calabria, the coast trends south-westward for about $1\frac{1}{2}$ miles to Punta Calamizzi and thence about 5 miles southward to Punta Pellaro, the south-eastern entrance point of the strait. This stretch of coast is composed of short terraces of varying elevation, which rise gradually in gentle slopes to a range of
10 coastal hills which extend south-eastward gradually receding from the coast.

Between Porto di Reggio Calabria and Punta Calamizzi, the coast is devoid of a beach but is easy to land on; Torrente Calopinace enters the sea at Punta Calamizzi. About half a mile southward of the
15 point, the coast is fringed by some sunken rocks and here begins a beach which extends about $1\frac{1}{4}$ miles southward to the mouth of Fiumara di Sant' Agata. This river has a broad, whitish bed and can be identified by a long iron bridge close within its mouth, and by a red two-storeyed house, close to the northern end of the bridge, which
20 stands out prominently against the surrounding low vegetation.

Southward of Fiumara di Sant' Agata, the coast consists of a low, steep bank which is fronted by a sea wall. Thence, as far as Punta Pellaro (*Lat.* $38^{\circ} 01' N.$, *Long.* $15^{\circ} 38' E.$), situated about 3 miles southward of the mouth of Fiumara di Sant' Agata, the coast forms
25 a bight with a narrow, steep-to beach at its head. The shore of the bight is backed by well-cultivated land with numerous buildings dotted amongst the trees. The church of San Gregorio, a white building with a spire and a red roof, about $1\frac{1}{4}$ miles south-eastward of the mouth of Fiumara di Sant' Agata, is one of the most prominent of these buildings.
30 Several rivers flow into the bight, amongst them Fiumara di Valanidi, which enters the sea close southward of San Gregorio church through a delta formed by two islands covered with dense vegetation.

On the south-eastern shore of the bight are the ruins of the old village of Pellaro Vecchia. Close westward of these ruins, a white
35 square tower surmounted by a white chimney, rises from a low red building and stands out against the surrounding vegetation, being most prominent when seen from between north and south-west. The new village of Pellaro is built on cultivated slopes eastward of Punta Pellaro, at an elevation of about 100 feet (30^m5), and in the midst of
40 thick vegetation.

Punta Pellaro is wide and sandy. Torre del Cane, a square pointed tower resembling a belfry, stands on a hill which overlooks the point about one mile south-eastward of its extremity. Close southward of the point is a bright-red church with a belfry.

45 A sandbank, on which there are depths of 10 feet (3^m0), fringes Punta Pellaro and extends about 100 feet (30^m5) westward of the extremity of the point.

Chart 188, plan of Porto di Reggio.

Reggio Calabria.—Aspect.—The town of Reggio Calabria is
50 situated on the coast between the mouth of Torrente Annunziata, about one mile southward of the mouth of Torrente Torbido, and the mouth of Torrente Calopinace, about $1\frac{1}{2}$ miles south-westward; when seen from northward, it appears as a many-coloured row of two-storeyed houses. Rione di Santa Caterina, the northern part of the

Charts 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 188, plan of Porto di Reggio.

town, is situated on the eastern side of the harbour and from an offing may be identified by its regular rows of houses with bright-red roofs ; on a closer approach, the yellowish spire of Santa Caterina church may be seen rising from among the roofs about a quarter of a mile east-south-eastward of the harbour entrance. The main part of the town lies southward of the harbour, and in the central part, the whitish belfry of Santa Lucia church, surmounted by five small pinnacles, may be distinguished about half a mile south-south-eastward of the harbour entrance. In the low, southern part of the town, a monument, consisting of two tall white pillars surmounted by a structure, situated on the beach about 9 cables south-south-westward of the harbour entrance, and the yellow cupola of San Giorgio church, situated about three-quarters of a cable southward of the monument, are prominent from all directions.

Pilotage.—Pilotage is compulsory ; local pilots are available.

Harbour. — **Lights.** — **Buoy.** — Porto di Reggio Calabria (*Lat.* $38^{\circ} 07' N.$, *Long.* $15^{\circ} 39' E.$) consists of an artificial basin, protected westward by a mole which extends about $3\frac{1}{2}$ cables northward from the coast abreast the northern part of the town. The outer side of the mole is fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends as much as half a cable offshore. The inner side of the mole is quayed and there is a special berthing basin (*Lat.* $38^{\circ} 07' N.$, *Long.* $15^{\circ} 39' E.$) for the Messina train-ferry at the south-western corner of the harbour. The southern and eastern sides of the harbour are also quayed and there is a small basin at its north-eastern corner.

The lights on each side of the harbour entrance are described on page 465.

A mooring buoy is moored about three-quarters of a cable north-westward of the harbour entrance.

There are depths of more than 4 fathoms (7^m3) in the harbour between the quay on the eastern side and a line joining the train-ferry berthing basin and the light-structure on the molehead, but vessels drawing more than 23 feet (7^m0) must lie some distance from the quays at the mole and vessels drawing more than 12 feet (3^m7) must lie at least 7 feet (2^m1) from the quay on the eastern side of the harbour.

Vessels berthed at the mole or at the quay on the eastern side of the harbour are sheltered from all winds, but onshore winds raise a short uncomfortable sea alongside Banchina Margottini, the quay on the southern side of the harbour.

In winter, vessels should moor with two anchors before securing to any of the quays ; the holding ground is good.

Caution.—Vessels about to enter or leave the harbour should give way to the train-ferries, waiting until they have berthed or cleared the entrance.

Anchorage.—There is anchorage in depths of from 14 to 16 fathoms (25^m6 to 29^m3), about half a cable offshore in Ancoraggio dei Giunchi, a small bight close southward of the mouth of Torrente Annunziata. This anchorage is sheltered from winds from between north and east but is untenable with strong winds from other directions.

There is also anchorage in Ancoraggio di Porto Salvo, about 2 cables south-south-westward of Ancoraggio dei Giunchi, off a masonry pier which projects about 72 feet (21^m9) from the beach in front of the

Charts 3935, 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Chart 188, plan of Porto di Reggio.

commemoration monument; this anchorage affords the same shelter as Ancoraggio dei Giunchi but the depths here are greater.

The currents at these anchorages are strong and irregular especially
5 at the start of the "scendente" (page 470).

Directions.—Vessels entering the harbour should steer for a position about $1\frac{1}{2}$ cables northward of the molehead before turning southward to enter the harbour, as the eddy currents making off the entrance may affect their manœuvring. When passing through the entrance,
10 a berth of about 30 yards (27^m4) should be given to some above-water blocks close to the eastern side of the entrance.

With southerly winds, vessels should berth alongside the mole heading southward; with northerly winds, vessels may be turned inside the harbour.

15 Moderate-sized vessels wishing to berth alongside Banchina Margottini, can be turned inside the harbour.

Winds.—When the water level in the harbour is low, fine weather may be expected even though there are other indications to the contrary; when the water level is high, bad weather from southward may
20 be expected. The maximum difference in the level of the water in the harbour is about 2 feet (0^m6). Low clouds over the Sicilian mountains, travelling rapidly southward, indicate the probability of north-easterly winds; white clouds rising behind those mountains forecast north-westerly winds. When the summit of Monte Etna is
25 capped with clouds, known locally as "alimature," south-westerly winds may be expected with some certainty.

Town.—Port facilities.—Reggio Calabria (*Lat. $38^{\circ} 07' N.$, Long. $15^{\circ} 39' E.$*) was totally destroyed by an earthquake in 1908 and has been completely rebuilt amid luxuriant vegetation; in 1950, it had
30 a population of about 142,722.

The chief industries are the extraction of the essence of oranges, lemons and bergamot, the rearing of silkworms and the weaving of silk, and the production of oil, wine and fruit. There is an active fishing industry, and fishing for swordfish is carried out from April to June.

35 The principal exports are vegetables, oil and wine, and the chief imports—cement, timber and coal. The Harbour office and custom house both stand on Banchina Margottini.

There is a civil and a military hospital in the town.

Small stocks of coal are normally maintained.

40 Fresh provisions are available and fresh water is normally laid on to the mole and to Banchina Margottini.

Small repairs to hull and machinery can be undertaken.

There is daily ferry service between Reggio Calabria and Porto di Messina and there is regular sea communication with other Italian
45 ports.

Charts 177 and 3935.

TIDAL STREAMS.—CURRENT.—Stretto di Messina connects the Tyrrhenian Sea northward with the Ionian Sea southward; in both these seas the tides are of the same type, viz. predominantly
50 semi-diurnal with two high waters and two low waters each lunar day. Off Capo Peloro, at the northern entrance to the strait, the tide behaves like that of the Tyrrhenian Sea; from Punta Pezzo southwards it behaves like that of the Ionian Sea. Though these two tides are of

Charts 3935, 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Charts 177 and 3935.

the same type, the times at which the high and low waters occur differ at the strait by about six hours ; hence when it is high water at Capo Peloro it is low water at Villa San Giovanni, only three miles farther south, and *vice versa*. Hence twice each lunar day the water level 5 has a maximum slope northward through the strait, and twice each lunar day a slope southward. Though the difference of level is but small, amounting to less than a foot at springs, it is concentrated into such a short distance that streams of 4 knots at springs are generated by it. These streams run with their greatest force where the strait is 10 most narrow and shallow, viz. between Punta Pezzo and Ganzirri, and their strength diminishes rapidly northward and southward of this line as the strait deepens rapidly.

The waters of the Ionian Sea southward are appreciably colder and more salt than those of the Tyrrhenian Sea northward. The difference 15 in density of the waters at the two ends of the strait sets up currents which flow from north to south through the strait on the surface and from south to north below about 15 fathoms. The normal rate of the surface south-going current is about 0.2 knot although with some strong winds its rate may rise to as much as one knot. This steady 20 south-going current has usually little effect on the tidal streams at springs but causes the north-going stream to commence later and to finish earlier at neaps ; at springs the north-going and south-going streams run for $6\frac{1}{4}$ hours each with a maximum rate of $4\frac{1}{4}$ knots ; at neaps the north-going stream runs for only about $5\frac{1}{2}$ hours and the 25 south-going stream for 7 hours with a maximum rate of $2\frac{1}{2}$ knots. A strong northerly wind can reduce the duration of the north-going stream to 3 hours, and increase that of the south-going stream to $9\frac{1}{2}$ hours.

Under ordinary conditions at springs, the north-going stream in 30 mid-channel between Punta Pezzo and Ganzirri (*Lat.* $38^{\circ} 15' N.$, *Long.* $15^{\circ} 37' E.$) begins at about 01 h. 45 m. before High Water, Gibraltar. To the south of this line the north-going stream begins later ; off Pace, about 2 miles west-south-westward of Ganzirri, it commences about 00 h. 15 m. before High Water, Gibraltar, and its strength 35 is only half those given above. Northward of the line, the north-going stream commences earlier ; between Capo Peloro and Torre Cavallo, about 02 h. 15 m. before High Water, Gibraltar, and north-westward of Scilla about 02 h. 45 m. before High Water, Gibraltar. The strength off Scilla is only about a third of that off Punta Pezzo. The north- 40 going stream sets along the axis of the strait throughout.

Off Punta Pezzo, the south-going stream begins at about 04 h. 30 m. after High Water, Gibraltar, under ordinary conditions at springs. As previously mentioned, the time of its beginning is earlier at neaps or when the steady current through the strait is stronger than usual. Its 45 beginning is earlier northward of Punta Pezzo and later southward by about the same amount as the beginning of the north-going stream ; the reductions in rate are also similar. It deviates somewhat from the axis of the strait ; first it sets towards Torre Cavallo, thence past Punta Pezzo and across towards the Sicilian shore in the direction of Pace. 50 It then sets down the Sicilian coast as far as Punta Secca (across the entrance to Porto di Messina) and thence crosses to the Calabrian shore and past Reggio Calabria, at the same time becoming wider and considerably weaker.

Charts 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Charts 177 and 3935.

The north-going and south-going streams are known locally as the "Montante" and the "Scendente" respectively.

At each turn of the tide, there occurs a brief stand followed by one or more "Tagli" or bores (similar in many respects to those set up in certain rivers) as the contrary stream establishes itself. These are caused by the particular shape of the bottom of the strait (in particular the submarine ridge from Punta Pezzo to Ganzirri) and by the difference in density between the two streams of water. The first "Taglio" consists of a band of waves with their crests lying across the strait and of no great height, which moves northward or southward between Capo Peloro and just south of Messina. After it has passed, the north- (or south-) going stream becomes established. The second "Taglio," which is marked by higher waves—up to 4 feet high off Punta Pezzo—and by many eddies and small whirlpools, passes up to an hour after the first; as it passes the stream increases in strength to a rate not much short of its maximum. If the wind is blowing against the advancing "Taglio," the short high seas formed may become dangerous for small craft.

Near the shores of the strait the streams may give rise to eddies with counter-currents close inshore, especially off or in the lee of projecting headlands. These eddies are locally termed "Bastardi" or "Refoli"; they extend half a mile or less offshore and commence from one to 2 hours after the turn of the stream. The most marked of these eddies are:—

On the North-going stream (Montante).

- (a) West-south-westward of Capo Peloro off the village of Faro (Lat. $38^{\circ} 16' N.$, Long. $15^{\circ} 38' E.$).
- (b) From the entrance to Porto di Messina northward to San Francesco di Paola.
- (c) North-eastward of Punta Pezzo between Conitello and Torre Cavallo.

On the South-going stream (Scendente).

- (a) From the old fort at San Salvatore clockwise round Porto di Messina and thence up the coast past San Francesco di Paola to Pace and Sant' Agata.
- (b) Southward of Capo Peloro.
- (c) Off Aciarello.
- (d) Between Catona and Punta Calamizzi.

Small whirlpools ("Garofali" or "Vortici") are seen in most parts of the strait especially soon after one or other of the "Tagli" has passed. They mark areas where the denser water is sinking. They are commonly accompanied by smooth oily patches ("Sorgimenti" or "Macchis d'Olio") where water is welling up from below. The only whirlpools which present any danger even to small craft are those which form always near the same places owing to peculiarities in the bottom. These are:—

- (a) Off the beach southward of Punta San Raineri.
- (b) Between 200 and 300 yards (182^m9 and 274^m3) offshore abreast Torre Faro.
- (c) A few hundred yards westward of Punta Pezzo.

They are stronger and larger at springs; any one of them does not exist continuously but lasts up to about half an hour when it dies away and a new one starts up nearby; (b) is the Charybdis of the

Charts 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

Charts 177 and 3935.

ancients ; its opposite number Scilla is now very feeble due to changes in the local topography caused by an earthquake in February 1783. There is, however, every reason to suppose that a whirl did exist off the village of Scilla (*Lat. 38° 15' N., Long. 15° 43' E.*) and that both it and Charybdis were rather more impressive than the latter is to-day. 5

Chart 3935.

COAST.—Punta Pellaro to Capo dell' Armi.—Light.—Between Punta Pellaro and Capo dell' Armi, about $4\frac{1}{2}$ miles south-10 south-eastward, the vegetation gradually diminishes, until in the immediate vicinity of the cape it disappears. Short, steep streams wind down from the mountains along this stretch, and the deposit which they bring down is clearly visible. The village of Le Fornaci, which may be identified by a tall chimney, is situated on the coast 15 about 2 miles south-south-eastward of Punta Pellaro, and about one mile farther south-south-eastward is the village of Lazzaro, behind which are some large modern buildings. The banks of Fiumara Lazzaro, a river which flows into the sea close southward of the village of that name, are covered with luxuriant vegetation. The village of 20 Motta San Giovanni stands at an elevation of 1,575 feet (480^m1) about 3 miles north-north-eastward of Capo dell' Armi and dominates this stretch of coast.

Capo dell' Armi is high, rounded and bare, with whitish rocky cliffs rising perpendicularly from the sea.

A light is exhibited, at an elevation of 312 feet (95^m1), from a white, octagonal tower, on a white two-storeyed dwelling, 39 feet (11^m9) in height, situated on Capo dell' Armi.

A disused signal station, consisting of a hut attached to a black and white chequered building resembling a low tower, stands at an elevation of 415 feet (126^m5) on the summit of Capo dell' Armi.



Capo dell' Armi
light-tower.

Charts 1976, 198, 165, 1800, 1440, 2158a, 2158b, 449.

CHAPTER XIII

SOUTHERN COAST OF ITALY—CAPO DELL' ARMI TO CAPO SANTA MARIA
DI LEUCA

CLIMATE AND WEATHER.—See page 31.

Chart 3935.

COAST.—Capo dell' Armi to Melito di Porto Salvo.—

Anchorage.—Between Capo dell' Armi (*Lat.* 37° 57' N., *Long.* 5 15° 41' E.) and the mouth of Fiumara di Melito, about 5½ miles east-south-eastward, the coast is mountainous and well-cultivated and is fringed by a narrow beach; east-south-eastward of the mouth of Fiumara di Molaro, about one mile south-eastward of the cape, it may be safely approached to within a short distance. This stretch of coast 10 rises to a plateau, buttressed by numerous spurs between which several streams flow into the sea being nearly all crossed near their mouths by iron bridges on stone pillars.

Small vessels with local knowledge may obtain anchorage off the coast between Capo dell' Armi and the mouth of Fiumara di Molaro, 15 in depths of about 3 fathoms (5^m5), about 1½ cables offshore. This anchorage affords good shelter from north-easterly winds.

The houses of the village of Le Saline may be seen amongst thick vegetation close south-eastward of Fiumara di Molaro and about three-quarters of a mile inland; a church with a spire painted bright 20 red may be seen among the buildings and there is a chimney close to the coast in front of the village.

Between Fiumara di Sant' Elia, which flows into the sea about 3¼ miles east-south-eastward of Capo dell' Armi, and Fiumara Annà, about half a mile farther eastward, is a prominent rocky cliff named 25 Pentedattilo, shaped like a huge hand. This cliff rises about 500 feet (152^m4) from the slope of a hill, the summit of which attains an elevation of 1,522 feet (463^m9), about 2 miles inland. At the foot of this cliff but visible from seaward only on bearings greater than 045° is the village of Pentedattilo. There is a prominent peak close eastward 30 of the cliff, and southward of it and about half a mile inland is the village of San Guiseppe in which is a church with a white belfry and the long, low building of a school.

Melito di Porto Salvo, a small town which in 1941 had a population of about 3,100, is situated amongst orchards on the slopes of a hill on 35 the western bank of Fiumara di Melito, close to its mouth. A block of

Charts 188, 1976, 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3935.

modern buildings in the town is prominent, and near the beach close south-westward of the town is a small church with a yellow cupola which makes the most prominent landmark in the vicinity. Fiumara di Melito is crossed by three bridges. Small quantities of fresh provisions may be obtained in the town. 5

Vessels with local knowledge may obtain anchorage close westward of the mouth of Fiumara di Melito, in depths of about 16 fathoms (29^m3), about 2 cables offshore; owing to the steep slope of the bottom, the holding ground is not good. 10

Melito di Porto Salvo to Bova Marina.—Coast.—Anchorage.

—From Melito di Porto Salvo, the mountainous coast, which is dominated by the plateau previously mentioned, trends eastward for about 6½ miles to Bova Marina.

Torre del Salto, a ruined tower on the coast about 1½ miles eastward of Melito di Porto Salvo, stands on a flat-topped hill which is intersected by a ravine through which flows a small stream; on the beach close eastward of the tower is a factory chimney and a group of houses. Torrente Acrifa enters the sea about one mile eastward of Torre del Salto; there is a group of houses on the western bank of the stream and two bridges, one of iron and the other of concrete, cross the river close within its mouth. Eastward of Torrente Acrifa, the hills recede from the coast, giving place to a well-cultivated plain. 20

Small local craft find anchorage off the coast abreast Torre del Salto (*Lat.* 37° 55' N., *Long.* 15° 49' E.). 25

Fiumara Amendolea enters the sea through a wide valley about 3 miles eastward of Torre del Salto and close within its mouth is an iron bridge on seven pillars. On the western bank of the river about 2 miles above its mouth, the village of San Carlo stands at an elevation of 246 feet (75^m0), and on the eastern bank and close within its mouth is Monte Pappagallo, which may be identified by its whitish colour and by a clump of trees on its summit. 30

About 2 miles eastward of the mouth of Fiumara Amendolea is the village of Bova Marina, which consists of a prominent group of houses intersected by Fiumara Sideroni which flows through a verdant valley. On a beach in front of the village is a chimney and a long, white shed. Eastward of the village is a prominent whitish cliff at the foot of which is an embankment supporting a road. 35

The town of Bova, which in 1941 had a population of about 2,300, stands at an elevation of 2,713 feet (826^m9) on the summit of a mountain about 4 miles northward of Bova Marina and is overlooked by Monte Porticella di Bova, 3,425 feet (1,043^m9) high, situated about three-quarters of a mile farther north-north-eastward. The latter mountain may be identified by its flattish top and by a notch on its western side which is prominent from seaward; its seaward side is furrowed by deep valleys. 45

Vessels with local knowledge can obtain anchorage off Bova Marina, in depths of about 16 fathoms (29^m3) about 4 cables offshore. Small vessels can anchor, in depths of about 3½ fathoms (6^m4) about 2 cables offshore, abreast a bridge which crosses Fiumara Sideroni. With northerly winds, this anchorage is considered the best on this part of the coast. 50

Bova Marina to Capo Spartivento. — Coast. — Danger. — Anchorage.—About half a mile east-south-eastward of Bova Marina,

Charts 1976, 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3935.

is Punta San Giovanni, a steep cliff fringed by some rocks close inshore ; there is a house on the point and from seaward the enclosing wall of a cemetery which overlooks it may be seen. Torrente San Pasquale flows into the sea between verdant banks about half a mile eastward of Punta San Giovanni ; eastward of the mouth of this river, the coast consists of a rocky cliff intersected by ravines and fringed by a narrow beach.

The village of Palizzi Marina is situated on the green banks of a stream about $2\frac{1}{4}$ miles eastward of Punta San Giovanni ; a dense wood divides the village into two parts and in the middle of the eastern part, close to an iron bridge, a church with a prominent low and pointed belfry may be seen.

About half a mile eastward of Palizzi Marina, on a cliff at the eastern side of a small valley, stands Torre Mozza, the dark ruins of which are only visible from eastward and westward ; westward of the tower, a few houses scattered along a road and the mouth of a tunnel may be seen.

A shoal rocky bank with a least depth of 2 feet (0^m6) over it fronts the coast abreast Torre Mozza and extends about $2\frac{3}{4}$ cables offshore.

Small vessels with local knowledge may obtain anchorage off Palizzi Marina railway station, about $5\frac{1}{2}$ cables westward of Torre Mozza.

Between Torre Mozza and Capo Spartivento, about 3 miles eastward, the coastal slopes become less steep and reach the coast in spurs which, owing to their whitish colour, resemble huge sand dunes the summits of which are covered with sparse vegetation. Along this stretch of coast, which is partly sandy and partly stony, there are many scattered houses, especially near Fiumara Spropoli, which enters the sea on the western side of Punta di Spropoli, about one mile westward of Capo Spartivento.

Vessels with local knowledge may obtain anchorage sheltered from northerly winds, off the coast between Torre Mozza and Punta di Spropoli, in depths of about $5\frac{1}{2}$ fathoms (10^m1), about $2\frac{3}{4}$ cables offshore, and in depths of from 8 to 11 fathoms (14^m6 to 20^m1), about $5\frac{1}{2}$ cables offshore. The beach fronting this stretch is slowly extending seaward.

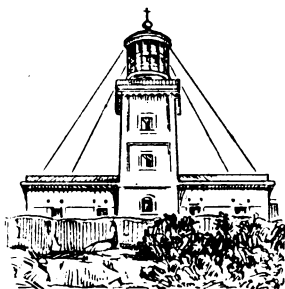
Capo Spartivento.—Light.—Signal station.—Dangers.—Capo Spartivento (*Lat.* 37° 55' N., *Long.* 16° 54' E.) is rugged and rocky and is fringed by a narrow sandy beach on which are some houses.

It may be identified from some distance by its whitish appearance and by the light-house and signal station on it. The cape may be approached to within a distance of half a mile.

A light is exhibited, at an elevation of 210 feet (64^m0), from a white square tower with a one-storeyed dwelling, 51 feet (15^m5) in height, situated on Capo Spartivento. Storm signals are displayed, *see* page 11.

A signal station, consisting of a circular building in front of a group of low buildings containing several windows, is situated close north-westward of the light-structure.

Two rocky patches lie close together about $2\frac{1}{2}$ cables south-south-



Capo Spartivento light-tower.

Chart 3935.

westward of Capo Spartivento light-structure and about $1\frac{3}{4}$ cables offshore ; there is a depth of 4 feet (1^m2) over the western, and of 7 feet (2^m1) over the eastern, patch. There are other rocky patches close inshore off this part of the coast which should not be approached 5 within a distance of at least 2 cables.

CAPO SPARTIVENTO TO PUNTA STILO.—Between Capo Spartivento and Punta Stilo, about 40 miles north-eastward, the coast consists of a low, narrow and sandy beach backed by hills which rise to mountains farther inland. On account of the lack of shelter, this 10 stretch of coast should be given a wide berth during strong onshore winds. Most of the villages on this coast are built with their houses parallel with the beach and from seaward appear large but actually they are of little importance.

Capo Spartivento to Bianco.—**Coast.**—**Anchorage.**—The mouth 15 of Fiume Paterello is situated close north-eastward of Capo Spartivento. Small vessels with local knowledge may obtain shelter from north-westerly winds off the mouth of this river, in depths of about 3 fathoms (5^m5), about $1\frac{1}{2}$ cables offshore.

Torre Sperlonga stands at an elevation of 302 feet (92^m0) on a rocky 20 hill close to the coast about $2\frac{1}{2}$ miles north-eastward of Capo Spartivento ; it is small, and from some bearings resembles a rocky outcrop. A rocky spit extends about $1\frac{1}{2}$ cables offshore abreast Torre Sperlonga.

The village of Brancaleone Marina is situated on the coast close north-eastward of Torre Sperlonga ; amongst its buildings is a belfry 25 with a round cupola. The village of Brancaleone, dominated by a large church without a belfry, stands at an elevation of 1,148 feet (350^m0) about $1\frac{1}{4}$ miles north-westward of Torre Sperlonga. Close south-westward of, and below, the latter village, is a yellow church with a low, square belfry. La Fiumarella, a stream which enters the 30 sea close north-eastward of Brancaleone Marina, is crossed near its mouth by a masonry bridge with three arches.

Vessels with local knowledge can obtain anchorage in convenient depths off Brancaleone Marina. There are depths of $5\frac{1}{2}$ fathoms (10^m1), good holding ground, about $2\frac{3}{4}$ cables offshore, but the anchor- 35 age is untenable with east-north-easterly and east-south-easterly winds.

Scoglio Monistili, an inconspicuous above-water rock, lies close inshore about 2 miles north-eastward of Torre Sperlonga.

Torre di Capo Bruzzano stands at an elevation of 515 feet (157^m0) on 40 a flat-topped hill with steep sides close to the coast about $2\frac{1}{2}$ miles north-north-eastward of Scoglio Monistili. At the foot of the tower is a masonry embankment which is prominent when bearing about 320° , and about half a mile south-south-westward of the tower is a white, two-storeyed house with a small square tower. 45

Capo Bruzzano (*Lat. $38^\circ 02' N.$, Long. $16^\circ 08' E.$*), about half a mile north-north-eastward of the tower of that name, terminates in a steep rocky point of a whitish colour, fringed by rocks extending a short distance offshore. About one mile northward of the cape is a small 50 white building.

The bare Monte Scapparone rises to an elevation of 3,465 feet ($1,056^m1$) about 6 miles westward of Capo Bruzzano ; it may be identified by its rounded summit which is sparsely covered by trees,

Charts 1976, 198, 1800, 1440, 2158a, 2158b, 448.

Chart 3935.

and by a spur which extends north-eastward towards the coast, with jagged, rocky cliffs. About midway between this mountain and Torre di Capo Bruzzano, is Colle di Faruzzano, 1,542 feet (470^m0) high, 5 surmounted by the houses of a village of the same name.

Fiumara La Verde enters the sea about 1½ miles northward of Capo Bruzzano; it may be identified by the tall trees which fringe its banks. The red building and white circular tank of a railway station may be seen amongst trees close to the coast, about a quarter of a mile 10 northward of the mouth of this river.

Vessels with local knowledge may obtain anchorage off the coast between Capo Bruzzano and the mouth of Fiumara La Verde, in depths of from 14 to 16 fathoms (25^m6 to 29^m3), sand, with Torre di Capo Bruzzano bearing 225°, distant about 1½ miles. Small vessels 15 with local knowledge may anchor close off the mouth of Fiumara La Verde, in depths of about 3½ fathoms (5^m9). These anchorages are untenable with onshore winds.

The village of Bianco, which in 1941 had a population of about 2,800, is situated on the coast about 3 miles northward of Capo Bruzzano and is easily identified by the white hills which dominate it northward and southward. In the middle of the village is a church with a low, grey belfry and a red-tiled cupola which is higher than the belfry. In the southern part of the village is a red square belfry surmounted by a spire.

25 Vessels with local knowledge may obtain anchorage off Bianco, in depths of from 10 to 11 fathoms (18^m3 to 20^m1), sand and good holding ground, about 8½ cables offshore. It is dangerous to remain at this anchorage with south-easterly winds, which, if strong, raise a heavy sea and are often accompanied by mist which renders the coast invisible 30 from a distance of about one mile.

Bianco to Siderno Marina.—Coast.—Danger.—Anchorage.—Fiumara Buonamico flows into the sea about 2½ miles, and Fiumara Careri, about 2½ miles, northward of Bianco; the mouths of both rivers may be identified by the bridges which cross them, that across 35 the latter river being the larger and more prominent.

A dangerous sandy shoal, reported in 1942, lies about half a mile offshore midway between Bianco and the mouth of Fiumara Buonamico.

The town of Bovalino Marina (Marina di Bovalino), which in 1941 40 had a population of about 4,500, is situated on the coast about three-quarters of a mile north-eastward of the mouth of Fiumara Careri. The locality may be identified by the railway station, consisting of a prominent group of reddish buildings, and by a large church with a red square belfry, surmounted by four small turrets, which stands in 45 the centre of the town.

The village of Bovalino Superiore (*Lat. 38° 10' N., Long. 16° 09' E.*) is situated at an elevation of 686 feet (209^m1) on the flat summit of a wooded hill about 2 miles north-north-westward of Bovalino Marina; in the northern part of the village is a large castle which is a good 50 landmark, especially when seen from north-eastward.

The summit of Monte delle Tre Dita, 2,461 feet (750^m1) high, situated about 5 miles northward of Bovalino Superiore, consists of three truncated conical peaks, and is very prominent. On many bearings, only two of the peaks are visible; approaching from south-



Capo Peloro light-tower



*Punta Pezzo
light-structure.*



*Punta San Raineri
light-tower.*

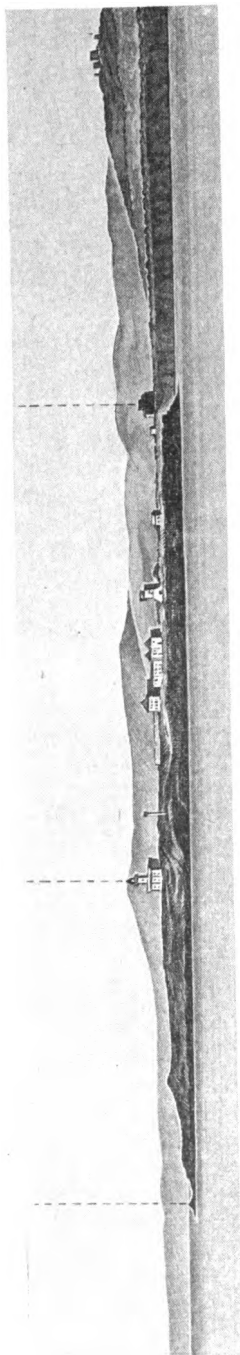
Punta Secca light-tower.

To face page 477.

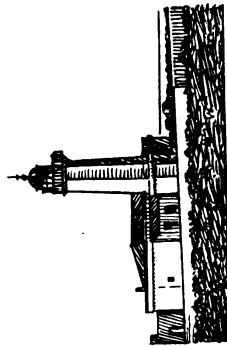
Punta Cicalea.

Capo Colonne light-tower, bearing 237°, distant one mile.

Signal station.



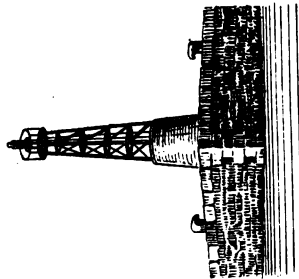
*Capo Colonne from east-north-eastward.
(Original dated 1877.)*



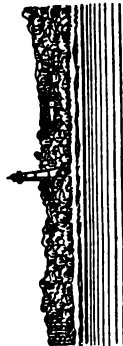
Capo Risuto light-tower.



Outer mole light-tower, Porto Nuovo.



Molo Giusti light-structure, Porto Nuovo.



Capo Trionto light-tower.

Chart 3935.

ward, the third peak becomes visible when the mountain bears less than 340° .

Between the mouth of Fiumara Buonamico and the village of Ardore Marina, about $3\frac{1}{4}$ miles north-eastward, the coast consists of a distinctive whitish beach. Ardore Marina, which is of little importance, may be identified by a prominent white belfry in the middle of the village and a large white precipice on the side of a mountain northward of it. The town of Ardore is situated at an elevation of 820 feet (249^m) on the summit of a hill about 2 miles north-westward of Ardore Marina and may be identified by a cemetery on the hill below the town. 5 10

Vessels with local knowledge may obtain anchorage off Bovalino Marina and also off Ardore Marina; the former anchorage affords shelter from northerly winds and is preferable to that off Bianco. 15

Fiumara di Condoianni flows into the sea about $1\frac{1}{4}$ miles north-eastward of Ardore Marina. The village of Condoianni, about $1\frac{3}{4}$ miles north-westward of the mouth of the river, is grouped around a conical hill, 646 feet (196^m) high, and a part of the village extends into a green valley northward of the hill; a prominent ruined square tower overlooks the village. 20

Condoianni railway station, a group of red two-storeyed buildings, is situated on the coast about half a mile north-eastward of the mouth of Fiumara di Condoianni. Torre di Gerace, about three-quarters of a mile north-eastward of the railway station, is nearly all demolished. Close northward of the tower is a long, low group of buildings attached to a taller white building with three windows in a row, standing close to an iron bridge. 25

The town of Locri is situated on the coast about $2\frac{1}{4}$ miles north-eastward of Torre di Gerace; it is one of the most important centres in the vicinity, and in 1941 had a population of about 7,500. Close southward of the town is a large yellow building with a red roof, and near the centre of the town there is a church with a white façade which has a small white spire on either side of it. Fiumara di Gerace enters the sea about half a mile south-westward of the town. 30 35

The town of Gerace is built on a rocky plateau, 1,572 feet (479^m) high, about $3\frac{1}{2}$ miles north-north-westward of the mouth of Fiumara di Gerace, and is prominent from seaward.

The town of Siderno Marina (Marina di Siderno), which in 1941 had a population of about 9,000, is dominated by the yellow square belfry of a church which is prominent from almost all directions seaward. It may also be identified by its railway station, prominent on account of its orange-red colour; by various chimneys northward of the town; by an iron bridge across the mouth of Torrente Torbido, locally known as Torrente Turbolo, about three-quarters of a mile north-eastward of the town; and by another bridge across Fiumara Siderno, which enters the sea about one mile south-westward of the town. 40 45

A pier of concrete and iron projects about 37 yards (33^m) from the coast abreast the yellow church mentioned above; in 1948, it was reported that owing to silting the edge of the beach had extended to the head of the pier. 50

Fresh provisions and water are available in Siderno Marina (*Lat.* $38^{\circ} 16' N.$, *Long.* $16^{\circ} 18' E.$).

Charts 1976, 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3935.

Vessels may obtain anchorage off Siderno Marina, in depths of from 11 to 14 fathoms (20^m1 to 25^m6), about 2½ cables offshore. An authorised local pilot will indicate the anchorage berth to vessels. The anchorage is sheltered from winds between west and north-west, but is completely exposed to those from between east and south-east.

Siderno Marina to Roccella Ionica.—Coast.—The village of Marina di Gioiosa is situated on the coast about 2½ miles north-eastward of Siderno Marina and close north-eastward of the mouth of Fiumara Turbolo; a succession of houses, scattered along the north-eastern bank of this river, connects the village with the town of Gioiosa Ionica, about 2½ miles north-north-westward, but they are mostly hidden from seaward by hills. An old circular tower, dark in colour, and a church with a red spire, may be distinguished amongst the houses. The wide mouth of Fiumara Turbolo may be identified by an iron bridge with five spans with another bridge with three spans close behind it. Monte Sant' Andrea, 2,605 feet (794^m0) high, situated about 5 miles north-north-eastward of the mouth of Fiumara Turbolo, is also a good landmark. The depths off Marina di Gioiosa are too great for anchorage.

Between the mouth of Fiumara Turbolo and Roccella Ionica, about 4 miles east-north-eastward, the coast is backed by groups of steep whitish hills which are intersected by numerous ravines.

The town of Roccella Ionica, which in 1941 had a population of about 7,500, is built partly on a plain close to the coast and partly on a rocky hill surmounted by a large citadel. Close northward of this hill is another hill, steeper and higher, on which, at an elevation of 492 feet (150^m0) is an old tower surrounded by ancient fortifications. From seaward, the citadel with its large, square castle makes an excellent landmark. In the centre of the town is a church with a white spire. There is considerable trade in the summer with the exporting of local produce.

Anchorage.—Caution.—Vessels may obtain anchorage off Roccella Ionica, but the beach here is continuously extending and local knowledge is necessary. Unauthorised local pilots are available. The bottom is mud and good holding ground.

In 1941, it was reported that a bar on which the depths were less than 16 feet (4^m9), with a least depth of 4 feet (1^m2), had formed about 2½ cables offshore between the mouth of Fiumara Turbolo and the mouth of Fiumara Allaro, about 7½ miles east-north-eastward. Off this stretch of coast, depths of 5½ fathoms (10^m1) are found about 3½ cables offshore, and it should not be approached within that distance.

Winds and currents.—Dark clouds gathering on the south-eastern horizon, locally known as "Barrata," indicates strong south-easterly winds; north-easterly winds are preceded by a strengthening of the normal south-west-going current along the coast and by clouds gathering on the mountains.

The current is usually south-west-going along the coast and is very weak, except, as stated above, before north-easterly winds, when its rate increases.

Charts 3935 and 3936.

Roccella Ionica to Punta Stilo.—Coast.—Torre Camillari (Lat. 38° 21' N., Long. 16° 28' E.), a white circular tower, is situated at an elevation of 135 feet (41^m1) on an olive-covered hill on the coast about

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Charts 3935 and 3936.

3 miles east-north-eastward of Roccella Ionica and between iron bridges crossing Fiumara Amusa and Fiumara Allaro. A factory chimney on the coast about one mile west-south-westward of the tower, and a group of houses at the foot of Monte Foca, 469 feet (143^m1) high, about a similar distance northward of the tower, are both good landmarks. The town of Caulonia, situated at an elevation of 978 feet (298^m1) about 3¼ miles north-westward of the tower, is also plainly visible from seaward; there is a prominent white belfry on a hillside close below the town.

From Torre Camillari, the coast trends in a slight curve for about 8 miles north-eastward to Punta Stilo. Torre San Fili, a circular building about 2 miles north-eastward of Torre Camillari, stands at an elevation of 367 feet (111^m9) on a hill sparsely covered with olives; there is a house close north-eastward of it.

Marina di Fondaco Nuovo, two groups of houses dominated by a circular metal tower, is situated on the coast about 1½ miles north-eastward of Torre San Fili; the town of Stignano stands at an elevation of 1,115 feet (339^m8) about 3 miles north-westward of the hamlet and is prominent from seaward.

Torre di Riace and Torre Vellera or Verdera, both in ruins, stand, at elevations of 318 and 312 feet (96^m9 and 95^m1), respectively, on the summits of two similar bare and flat-topped hills; the former stands about 2¾ miles and the latter 4¼ miles, north-eastward of Torre San Fili. Torre di Riace stands out when seen from northward and is visible from a considerable distance; Torre Vellera is less conspicuous, being about the same colour as the bare hill behind it.

Marina di Monasterace, about 1¼ miles north-eastward of Torre Vellera, consists of a group of reddish houses among the thick vegetation which clothes the coast between the mouth of Fiumara Stilaro, about three-quarters of a mile north-eastward of Torre Vellera, and the mouth of Fiumara Assi, about 1¾ miles farther north-north-eastward. The village of Monasterace, situated at an elevation of 459 feet (139^m9), on a conical hill about 2 miles northward of Torre Vellera, is surrounded by an antique wall and from a distance resembles a large castle.

Punta Stilo.—Light.—Punta Stilo, situated about 2 miles north-north-eastward of Torre Vellera, is low and sandy and is dominated by a hill on which stands a light-structure. About 6 miles west-north-westward of the point, and on the alignment of the light-structure with Monasterace, is Monte Consolino, 2,300 feet (701^m0) high, the summit of which, a high, rugged and precipitous cliff, forms an excellent landmark; close eastward of this cliff, at an elevation of 1,312 feet (399^m9), is the village of Stilo. Monte Stella, 3,432 feet (1,046^m1) high, rises about 2 miles south-westward of Monte Consolino and is easily identified from north-eastward both by its elevation and by the relative sharpness of its summit.

A light is exhibited, at an elevation of 170 feet (51^m8), from an octagonal tower, painted in black and white horizontal bands, with a yellow house at its base, 44 feet (13^m4) in height, situated on Punta Stilo (*Lat.* 38° 27' N., *Long.* 16° 35' E.).

Chart 3936.

GOLFO DI SQUILLACE.—Golfo di Squillace is entered between

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3936.

Punta Stilo and Capo Rizzuto, about $36\frac{1}{2}$ miles north-eastward; it has low and sandy shores which are backed by the high, green slopes of the Appennino Calabrese. Numerous streams, almost all of which
 5 are short and swift-running, flow into the gulf.

Punta Stilo to Soverato.—Coast.—Anchorage.—From Punta Stilo, the coast trends northward for about 15 miles to the village of Soverato. The hamlet of Marina di Vincerello, situated about 2 miles northward of Punta Stilo, consists of a small group of houses, prominent
 10 among them being an old square and massive villa near the northern end. Marina di Sant' Antonio, another small group of large, dark houses, with a tower rising from amongst them, stands on the coast about $2\frac{1}{2}$ miles northward of Marina di Vincerello.

About 3 miles northward of Marina di Sant' Antonio is Marina di
 15 Badolato, a village surrounded by trees and not easily distinguished. The locality may be identified by two large, dark-red buildings on small hills close southward of the village, and by another large building on the slopes of Monte Manna, a hill which attains an elevation of about 300 feet (91^m4) about half a mile west-north-westward of the village.
 20 The two villages of Santa Caterina dell' Ionio and Sant' Andrea Apostolo dell' Ionio may be readily identified; the former is situated on a rounded hill, 1,578 feet (481^m0) high, about 3 miles south-westward of Marina di Badolato, with a belfry and two tall umbrella-shaped pine trees rising above the houses and prominent from either north-
 25 eastward or south-eastward; the latter stands on a hill, 1,017 feet (310^m0) high, about $3\frac{1}{2}$ miles north-north-westward of Marina di Badolato and has two churches with prominent belfries which overlook all the other buildings; one of these churches is in the middle of the village, and the other, which has a light-coloured spire, is situated
 30 at its southern end.

The town of Badolato stands at an elevation of 820 feet (249^m9) between these two villages and about 2 miles westward of Marina di Badolato. The town is inconspicuous against a background of similar colour to its buildings and can only be distinguished from seaward
 35 during the morning.

Vessels with local knowledge may obtain anchorage off Marina di Badolato, in depths of about $5\frac{1}{2}$ fathoms (10^m1), about 4 cables off-shore; this is considered the best anchorage off this part of the coast.

From Marina di Badolato, the coast trends northward for about
 40 5 miles to the mouth of Torrente Melis, the bed of which is steep and whitish and is crossed near its mouth by a red iron bridge. A tall chimney is situated close within the coast about 2 miles southward of this bridge and stands out prominently when seen from either north-eastward or south-eastward. Fiume Ancinale enters the sea about
 45 one mile northward of the mouth of Torrente Melis and is also crossed close within its mouth by a long iron bridge.

Soverato.—Buoy.—Anchorage.—The village of Soverato is situated on the coast about $1\frac{1}{2}$ miles north-north-westward of the mouth of Fiume Ancinale and is prominent from seaward. On a hill
 50 overlooking the village is a grey church with a red roof close to which is a large two-storeyed building of a dark-red colour. An ancient dark square tower stands close northward of, and at the same elevation as, the church. About three-quarters of a mile west-south-westward of the village is Soverato Superiore in which is a prominent

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3936.

church, and about $3\frac{1}{4}$ miles farther west-south-westward, and at an elevation of 1,312 feet (399^m9), is the village of Gagliato (*Lat.* $38^{\circ} 41' N.$, *Long.* $16^{\circ} 28' E.$).

The depths in the roadstead abreast Soverato are continually decreasing owing to deposit brought down by Fiume Ancinale. There is a concrete pier abreast the village but in 1941 it was completely silted up. A mooring buoy, for the use of local fishing craft, is moored about half a cable north-north-eastward of the pier.

Vessels with local knowledge may obtain anchorage about $1\frac{1}{4}$ cables offshore, in depths of about 16 fathoms (29^m3) with the grey church bearing 230° . This anchorage is partly sheltered from south-eastward by a shoal spit fronting a sandy point about $1\frac{1}{4}$ cables east-south-eastward of the village, and is reported to be the safest off this part of the coast and may be used all the year round; the shoal spit is continually extending eastward due to deposit brought down by Fiume Ancinale.

Fresh provisions may be obtained in the village.

Minor repairs to small craft can be undertaken.

Currents.—Off Soverato, the currents are variable and depend on the wind. They normally follow the line of the coast and sometimes attain a rate of 2 knots.

Soverato to Marina di Catanzaro.—**Coast.**—From Soverato, the coast curves north-westward, northward and north-eastward for about $4\frac{1}{4}$ miles to Punta di Staletti. Pietra Grande is the largest of a group of above-water rocks lying close inshore about $1\frac{1}{4}$ miles south-south-westward of Punta di Staletti; it can be readily distinguished when coasting as its dark mass interrupts the whitish line of the beach.

Punta di Staletti is the extremity of a promontory, 1,253 feet (381^m9) high, called Coscia or Monte di Staletti, which is partly covered in vegetation and terminates in steep rocky sides. On its summit is a castle with a red roof and small crenellated tower. There are some houses half-way up the rocky cliff and close south-westward of them is a long viaduct with twelve arches which is prominent from a short distance seaward.

Squillace, a large village about 3 miles west-north-westward of Punta di Staletti, stands at an elevation of 1,132 feet (345^m0) on an isolated conical hill covered in dark vegetation; it is surrounded by mountainous country on which are scattered patches of cultivation.

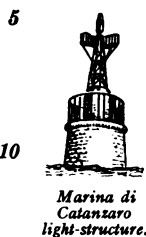
The town of Catanzaro, which in 1941 had a population of about 27,000, is situated about 9 miles northward of Punta di Staletti and about 5 miles inland. It can be easily identified from seaward as it stands at an elevation of 1,125 feet (342^m9) and appears as a large white patch on the mountains; at night, its lights are visible from a distance of about 15 miles offshore.

Marina di Catanzaro.—**Light.**—**Buoy.**—The town of Marina di Catanzaro (*Lat.* $38^{\circ} 49' N.$, *Long.* $16^{\circ} 37' E.$), which in 1941 had a population of about 5,500, is situated about 4 miles north-eastward of Punta di Staletti and is the most important centre on the shores of Golfo di Squillace. Its buildings, which are very scattered, include numerous large white factories and tall chimneys; a long iron railway bridge close south-westward of the town, and a square tower in ruins on an isolated hill north-westward of the town, are both prominent

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3936.

from seaward against a thickly-wooded background. Fiume Corace flows into the sea close south-westward of the town; there is a small sandbank at its mouth formed by the deposit brought down by the river. The prominent reddish ruins of a large church named La Roccelletta may be seen above an olive grove about 6 cables south-westward of the mouth of the river.



A light is exhibited, at an elevation of 39 feet (11^m9), from a red iron framework structure on a white circular stone base, 30 feet (9^m1) in height, situated on the beach in front of the town; a group of houses, painted in black and white chequers, stands close to the light-structure.

A mooring buoy is moored about 1 $\frac{3}{4}$ cables south-eastward of the light-structure, in a depth of about 30 fathoms (54^m9).

Pilotage.—There are unlicensed pilots available who will board vessels on application being made to the local authority.

Anchorage.—In winter, vessels can always work cargo with offshore winds as the sandy bottom is good holding ground, and the depths permit a close approach to the beach. With settled northerly winds, steam vessels with local knowledge usually anchor in depths of from 11 to 14 fathoms (20^m1 to 25^m6) at a convenient distance offshore, and veering cable, approach bows on to the beach, taking a hawser ashore to maintain their position, the stern remaining in deep water. Large vessels can anchor eastward of the mooring buoy, in depths of about 16 fathoms (29^m3). It is dangerous to remain in the roadstead with onshore winds.

Winds.—Clouds accumulating over Punta Stilo indicate south-south-easterly winds and clouds near Capo Rizzuto indicate north-north-easterly and east-north-easterly winds; the darker and denser the clouds, the stronger the wind.

Port facilities.—Marina di Catanzaro exports leather, soap, oil and bricks. There are a few lighters which transport personnel and goods by running aground on the beach.

There is a large civil hospital as well as a military hospital in the town of Catanzaro (*Lat.* 38° 54' N., *Long.* 16° 36' E.).

Marina di Catanzaro to Le Castella.—**Coast.**—**Anchorage.**—

Danger.—Between Marina di Catanzaro and Le Castella, about 19 $\frac{1}{2}$ miles east-north-eastward, there are no sheltered anchorages, but, with offshore winds, vessels can anchor anywhere about half a mile off the coast between Marina di Catanzaro light-structure and the mouth of Fiumara Crocchio, about 11 miles east-north-eastward, and about one mile off the coast between the mouth of that river and Barco Vercillo, an anchorage about 7 miles farther east-north-eastward.

A group of large greyish houses is situated at the foot of Colle Barone, a hill which attains an elevation of 456 feet (139^m0) about 2 $\frac{1}{4}$ miles north-north-eastward of Marina di Catanzaro light-structure.

Torre del Crocchio, dark and in ruins, stands close to the coast on the western bank of the river of that name and is prominent from seaward. Behind it are numerous buildings, amongst which a yellow railway station, about half a mile north-westward of the tower, is prominent. The village of Botricello is situated on a small hill about 2 $\frac{1}{2}$ miles north-eastward of Torre del Crocchio; Marina di Botricello,

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3936.

situated on the coast about one mile southward of Botricello, consists of a large group of low houses surrounded by trees ; amongst the houses is a belfry and the prominent buildings of a railway station.

The village of Cropani (*Lat. 38° 58' N., Long. 16° 47' E.*) stands at an elevation of 1,188 feet (346^m9) about 3½ miles north-north-westward of Torre del Crocchio, and may be identified by a church with a slender and prominent belfry and an inconspicuous cupola ; about 3½ miles north-westward of Cropani is the town of Sersale, which is situated at an elevation of 2,306 feet (702^m9).

About 4 miles north-eastward of Torre del Crocchio is Tempone Tenese, a hill 650 feet (198^m1) high, which may be distinguished by its dark colour and yellowish patches, and by Torre di Magliacane, a grey, circular and very prominent tower, situated near the foot of its southern slope about 8 cables from the summit ; there are several reddish houses half-way up the slopes of this hill. Tempone Steccato, another hill 328 feet (100^m0) high, with several houses situated southward of its highest peak, rises about 2 miles eastward of Torre di Magliacane. The town of Cutro, situated about 5 miles north-north-eastward of Tempone Steccato, with an isolated tower close south-eastward of it, stands at an elevation of 705 feet (21^m9) overlooking the district, and is prominent from seaward.

About 4½ miles eastward of Torre di Magliacane is the village of San Leonardo, which stands at an elevation of 295 feet (89^m9), near the eastern edge of a wood about three-quarters of a mile within the northern shore of the anchorage of Barco Vercillo.

Chart 198, plan of Cape Rizzuto anchorage.

From the beach southward of San Leonardo, the coast trends south-south-eastward for about 3 miles to Le Castella, forming the eastern shore of Barco Vercillo anchorage which is sheltered from winds from the northern semi-circle and is a good anchorage for small vessels with local knowledge. Vessels may obtain anchorage, in depths of about 5½ fathoms (10^m1), sand, about 2½ cables from the northern shore of the anchorage ; care must be taken, however, to avoid a bank which, with depths of less than 3 fathoms (5^m5) over it, fronts the eastern shore of the anchorage and extends as much as 4 cables offshore in places. Secca del Palombaro, a 1½-fathom (3^m2) patch, lies near the outer edge of this bank, about 11 cables west-north-westward of Le Castella.

Le Castella.—Dangers.—Le Castella is the name given to a group of prominent ruined bastions, the remains of an old castle surmounted by a circular tower ; it stands on a small and low peninsula almost entirely surrounded by sea with a small fishing village of the same name situated close north-eastward of it. La Nunziata, a church surmounted by a small cross, is situated about half a mile north-north-eastward of Le Castella. Small local craft anchor in the inlet close eastward of Le Castella.

Secca Le Castella, two rocky shoals close together, lies about 5½ cables south-south-westward of Le Castella. The south-eastern head has a least depth of 15 feet (4^m6) over it, and the north-western head has a least depth of 11 feet (3^m4) over it. The depths in the fairway of the channel between this danger and the coast are from 3½ to 5½ fathoms (6^m4 to 9^m6). Secca Le Castella is covered by the red sector of Capo Rizzuto auxiliary light, *see* below, between the bearings of

Charts 3936, 198, 1800, 1440, 2158a, 2158b, 449.

Chart 198, plan of Cape Rizzuto anchorage.

084° and 135°. The two towers on Capo Rizzuto, *see* below, in line, lead about 1½ miles southward of this danger.

Le Castella to Capo Rizzuto.—Dangers.—Between Le Castella 5 and Capo Rizzuto (*Lat.* 38° 54' N., *Long.* 17° 06' E.), about 3½ miles east-south-eastward, the coast forms a bay with moderately high and steep shores. Capo Piccolo, the extremity of a rocky promontory with a flat-topped hill close northward of it, projects a short distance southward from the head of the bay, about 2½ miles eastward of Le 10 Castella. On high bare ground northward of the head of the bay, Torre Ritani (*chart* 3936) stands at an elevation of about 410 feet (125^m0); it resembles a house with a red roof surrounded by a wall. About one mile north-eastward of the tower are two white silos, close together, which stand out against a wooded background and are 15 prominent when viewed from southward or eastward.

The shores of the bay are fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends in places as much as three-quarters of a mile offshore. On this bank are three shoals; one with a depth of 13 feet (4^m0), rock, over it, lies about 7 cables west-south- 20 westward; the second, with a depth of 3 fathoms (5^m5) over it, lies about 3½ cables southward, and the third, with a depth of 2½ fathoms (4^m6) over it, lies about 7 cables south-eastward of Capo Piccolo.

Capo Rizzuto.—Light.—Anchorage.—Capo Rizzuto is the extremity of a low rocky promontory on which is a lighthouse and two 25 towers, a square tower on the western side, and a circular tower on a point on the eastern side, about half a mile north-eastward of the extremity of the cape; these towers are visible from a considerable distance seaward and render identification easy. The village of Madonna Greca lies about 9 cables north-north-eastward of the extrem- 30 ity of the cape and is also prominent from north-eastward. From an offing southward of the cape, Catanzaro (*page* 481) has the appearance of a prominent white patch high up above the sea.

A light is exhibited, at an elevation of 121 feet (36^m9), from a white octagonal tower attached to a one-storeyed dwelling, 57 feet (17^m4) 35 in height, situated about 2 cables within the extremity of Capo Rizzuto. An auxiliary light is exhibited, at an elevation of 118 feet (36^m0), from the same tower. *See* view facing *page* 477.

Vessels with local knowledge can obtain anchorage in the bay westward of Capo Rizzuto. Vessels should approach keeping Capo 40 Piccolo bearing 011° and should anchor, in depths of about 8 fathoms (14^m6), on a line joining Le Castella and the circular tower on Capo Rizzuto; the bottom is rocky and irregular and vessels are recommended to use an anchor buoy.

Small vessels can anchor closer inshore between Capo Piccolo and 45 Capo Rizzuto, northward of the 2½-fathom (4^m6) shoal mentioned above. Vessels should approach this anchorage keeping the extremity of the Le Castella peninsula bearing 270° astern, and should anchor, in depths of about 3½ fathoms (5^m9), with the square tower on Capo Rizzuto bearing 162°; vessels are also advised to use an anchor 50 buoy here.

Chart 3936.

COAST. — Capo Rizzuto to Capo Colonne. — Dangers. — Anchorage.—Between Capo Rizzuto and Capo Colonne, about 10

Charts 3936, 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3936.

miles north-eastward, the coast is generally flat and rocky, with steep cliffs, from about 50 to 65 feet (15^m2 to 19^m8) high, in many places.

Charts 198, plan of Cape Rizzuto anchorage, 3936.

5

About half a cable south-westward of the point, on which is the circular tower, is a large flat and reddish rock.

Secche di Capo Rizzuto or Secche di Madonna Greca are two shoals situated about 1½ and 2¼ miles, respectively, east-north-eastward of Capo Rizzuto; the former has a least depth of 2 fathoms (3^m7) over it and lies about 8 cables offshore, and the latter has a least depth of 4¼ fathoms (7^m8) over it and lies about 11 cables offshore. Capo Colonne (*Lat. 39° 01' N., Long. 17° 12' E.*), bearing about 022° and just open eastward of Capo Cimiti, *see below*, leads about 3 cables south-eastward of these dangers; Capo Colonne light (page 486) is obscured over these dangers and they are covered by the red sector of Capo Rizzuto light between the bearings of 225° and 270°.

Small vessels with local knowledge can obtain shelter from winds between west through north to north-east in two coves on the eastern side of Capo Rizzuto, one close south-westward and the other close north-eastward of the circular tower about half a mile north-eastward of the extremity of the cape. Shelter from north-eastward is obtained from a shallow bank which extends about 4 cables south-eastward from a point on the coast about 3½ cables eastward of the village of Madonna Greca.

25

Arene Rosse are two prominent reddish landslips situated on the coast about 3½ miles north-eastward of Capo Rizzuto; the south-western of the two is the more extensive.

Capo Cimiti, locally known as Capo di Mezzo, is a low, rocky promontory situated about 5½ miles north-eastward of Capo Rizzuto. A shoal bank, with a depth of 29 feet (8^m8) over its extremity, extends about three-quarters of a mile east-north-eastward of the cape. A shallow cove, suitable only for boats, lies close south-westward of the cape; it may be identified by a long wall at its head and by the ruins of a few houses on its south-western side.

35

Small vessels with local knowledge may obtain shelter from winds between south-west through west to north, in depths of about 20 feet (6^m1), about 1¼ cables offshore, eastward of a prominent building situated a short distance northward of Capo Cimiti.

Chart 198, plan of Crotone and Cape Colonne anchorages.

40

Torre Scifo, a square building with windows and a high-pitched roof, stands on the coast about one mile west-south-westward of Capo Colonne; about 6 cables westward of this tower and about 3 cables inland is a long white viaduct with several arches.

Capo Colonne. — Danger. — Light. — Radio D.F. station. — Signal station.—Capo Colonne is the northern extremity of a flat, level and rocky promontory about 66 feet (20^m1) high, the southern extremity of which, about 6 cables southward, is known as Punta Cicala. On the promontory are some houses, a lighthouse, a large tower, square and old, and a small chapel. Close in front of the structure are the remains of an ancient temple and a Doric column, *see view facing page 477*. Monte San Nicola dell' Alto and Castello di Strongoli (page 489) can be identified from off this cape.

50

A bank with a least depth of three-quarters of a fathom (1^m4) over

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Chart 198, plan of Crotone and Cape Colonne anchorages.

it, fringes the promontory and extends as much as $2\frac{1}{2}$ cables eastward of it.

A light is exhibited, at an elevation of 133 feet (40^m5), from an octagonal tower on a white two-storeyed dwelling, 72 feet (21^m9) in height, situated about $2\frac{1}{2}$ cables southward of the extremity of Capo Colonne. Distress signals are displayed by day from the light-structure.

A radio D.F. station is situated close to the light-structure.

10 A signal station, consisting of a group of houses surmounted by a tower painted in black and white chequers, is situated about 2 miles westward of the light-structure at an elevation of 513 feet (156^m4). Messages from vessels will be transmitted by telegraph. Storm signals are displayed, *see* page 11.

15 **Anchorage.**—Vessels with local knowledge may obtain anchorage southward of the promontory sheltered from winds from the northern semi-circle, in depths of about 11 fathoms (20^m1), with Capo Colonne light-structure bearing 030° and Torre Scifo (*Lat.* $39^\circ 01' N.$, *Long.* $17^\circ 11' E.$) bearing 284° .

20 *Chart 198.*

GOLFO DI TARANTO.—Golfo di Taranto is entered between Capo Colonne and Capo Santa Maria di Leuca, about 72 miles north-eastward.

The western side of the gulf is dominated by the mountains of the Appennino Calabrese which are visible from a considerable distance. The north-eastern side is flat and low and forms the southern boundary of the large plain of Salentina. All the shores of the gulf are fringed by a sandy beach which, in general, fronts marshy ground.

Currents.—A south-going current, which rarely attains a rate of one knot, usually sets along the western side of the gulf. Southerly winds influence its direction, and when fresh and durable, or before a strong south-easterly wind, the current may set northward.

On the eastern side of the gulf the currents are much influenced by the winds especially southerly winds, and a north-west-going current often indicates strong southerly winds.

Chart 198, plan of Crotone and Cape Colonne anchorages.

WESTERN SIDE OF THE GULF.—Coast.—Caution.—From Capo Colonne, the coast trends north-westward for about $4\frac{1}{2}$ miles to Porto di Crotone and is fringed by rocks close inshore in many places.

40 In 1951, it was reported that the shorebank fringing the coast between Capo Colonne and Porto di Crotone, on which the depths are less than 3 fathoms (5^m5), extended farther offshore than is charted, and caution is therefore necessary when approaching the anchorages between Capo Colonne and Porto di Crotone.

45 *Chart 198, plan of Port Crotone.*

Porto di Crotone.—The town of Crotone is situated on a point 141 feet (43^m0) high and has two harbours, one on the northern, and the other on the eastern, side of the point. The town, which in 1941 had a population of about 20,000, extends westward and southward of a prominent fort with high bastions, situated between the two harbours. Owing to the lack of harbours of refuge along this coast, both of these harbours are often congested in winter.

Charts 3936, 3937, 198, 1800, 1440, 2158a, 2158b, 449.

Chart 198, plan of Port Crotone.

The locality may be identified by the fort mentioned above ; by two large factories, visible in clear weather from a distance of about 10 miles ; and by a cemetery which, situated in an isolated position about one mile southward of the town and surrounded by a low wall, is prominent. At night, the lights in the town and some very bright bluish lights situated north-westward of the harbours make it difficult to distinguish the lights at the harbour entrances.

Pilotage.—Pilotage is compulsory. There are authorised pilots who will board vessels making the customary signals outside the harbour if the weather permits. Previous notice should be given if requiring a pilot at night.

Currents.—A constant south-going current runs about 2 miles off this part of the coast. Close off Porto di Crotone, the currents are weak, variable and influenced by the winds, especially by south-easterly and northerly winds.

Porto Vecchio. — Light. — Depths. — Buoy. — Porto Vecchio, situated east-south-eastward of the town, is protected from eastward by a wide breakwater which extends south-south-eastward and south-south-westward for about $2\frac{1}{2}$ cables from the coast eastward of the fort ; it is quayed on its inner side. The harbour affords good shelter and can accommodate vessels not exceeding 230 feet (70^m1) in length and 16 feet (4^m9) in draught.

A light is exhibited, at an elevation of 44 feet (13^m4), from an iron framework structure on a stone base, 33 feet (10^m1) in height, situated about 130 feet (40^m6) within the head of the breakwater at Porto Vecchio (*Lat.* 39° 05' N., *Long.* 17° 08' E.).

There are depths of $3\frac{1}{4}$ fathoms (5^m9) in the entrance and in the middle of the outer part of Porto Vecchio ; a conical buoy is moored about three-quarters of a cable northward of the light-structure on the breakwater, and marks the edge of the 3-fathom (5^m5) contour line on the eastern side of the harbour.

In 1946, it was reported that the quay at the head of Porto Vecchio, which extends westward from the root of the breakwater, was damaged and could not be used for berthing vessels. At that date, vessels not exceeding 16 feet (4^m9) in draught could berth alongside the breakwater quay from a position abreast the light-structure for a distance of about 600 feet (182^m9) northward.

With fresh easterly winds, the sea breaks at the mouth of Porto Vecchio and makes entrance dangerous. A pier extends about 230 feet (70^m1) south-eastward from about the middle of the western side of the harbour ; vessels can berth alongside its north-eastern side, but in 1946 it was in a poor state of repair. Pontile della Sanità, a small masonry pier on the western side of the harbour entrance, about one cable west-north-westward of the breakwater head, can be used by boats in favourable weather.

Vessels approaching Porto Vecchio from northward must avoid a rocky ledge which extends about one cable south-eastward of the breakwater head. When entering the harbour, vessels should give the western side of the breakwater head a berth of not less than 100 feet (30^m5). At night, it should be borne in mind that the light on the breakwater is situated about 130 feet (40^m6) within the head.

Porto Nuovo.—Lights.—Depths.—Buoy.—Porto Nuovo, situated north-eastward of the town, is protected from eastward by a

Charts 3936, 3937, 198, 1800, 1440, 2158a, 2158b, 449.

Chart 198, plan of Port Crotone.

mole extending about $4\frac{1}{2}$ cables north-north-westward from the coast eastward of the prominent fort, and, from westward, by Molo Giunti, which extends about $1\frac{3}{4}$ cables north-north-eastward from a position
 5 about 3 cables west-north-westward of the root of the outer mole. There are depths of from $4\frac{3}{4}$ to 5 fathoms (8^m7 to 9^m1) in the entrance and in the middle of the outer part of Porto Nuovo.

A light is exhibited, at an elevation of 39 feet (11^m9), from a masonry tower, 33 feet (10^m1) in height, situated on the head of the outer mole
 10 at Porto Nuovo. See sketch facing page 477.

A light is exhibited, at an elevation of 33 feet (10^m1), from an iron framework structure on a white circular concrete base, 24 feet (7^m3) in height, situated on the head of Molo Giunti. See sketch facing page 477.

15 Vessels up to about 330 feet (100^m7) in length can safely enter Porto Nuovo. Vessels drawing 26 feet (7^m9) can berth alongside Molo Giunti, but can only use the outer part of the harbour. Vessels of a draught not exceeding 16 feet (4^m9) can berth alongside the quay at the inner part of the outer mole, but the quay at the head of the
 20 harbour is fronted to a distance of about 230 feet (70^m1) by a shoal bank; a mooring buoy is moored about $1\frac{1}{2}$ cables south-south-eastward of the head of Molo Giunti and marks the edge of this bank, but it can only be used as a warping buoy by vessels berthed at the outer mole.

25 **Sea level.**—During winter, a low water level at Porto di Crotone indicates the probability of northerly winds, possibly very violent. In summer, however, a low water level indicates that fine weather may be expected, while a high water level forecasts the approach of bad weather from between south-west and south-east.

30 **Anchorage.**—Anchorage may be obtained about half-way between Capo Colonne and Porto di Crotone, in depths of about 8 fathoms (14^m6), sand, with the signal station westward of Capo Colonne bearing 180° , and the north-eastern extremity of the fort in the town of Crotone bearing 325° .

35 Anchorage may also be obtained south-eastward of Crotone, in depths of about 7 fathoms (12^m8), with the light-structure on the breakwater at Porto Vecchio bearing 330° , and the cemetery bearing 255° . Small vessels can anchor closer inshore, in depths of about 4 fathoms (7^m3), eastward of the cemetery.

40 The holding ground is good, but these anchorages are exposed to winds from the eastern semi-circle. As stated on page 486, caution is necessary when approaching these anchorages.

Port facilities.—Porto di Crotone (*Lat.* $39^\circ 05' N.$, *Long.* $17^\circ 08' E.$) is an industrial centre of growing importance. The principal
 45 industries are the manufacture of fertilisers and zinc; timber and agricultural produce are also important exports. There is a civil hospital of moderate size in the town at which seamen are received.

Small stocks of coal and limited stocks of fuel oil, motor spirit and lubricating oil are normally maintained; in 1945, it was reported
 50 that no supplies of coal or of liquid fuel were available.

Fresh provisions are plentiful and fresh water is normally available at the quays, but in summer the supply of fresh water is limited; in 1945, fresh water was only available at Molo Giunti.

There are two patent slipways, suitable only for small craft, in

Charts 3936, 3937, 198, 1800, 1440, 2158a, 2158b, 449.

Chart 198, plan of Port Crotone.

Porto Nuovo. There are several cranes, the largest being of 9 tons lifting capacity.

Repairs to hull and machinery of small vessels can be undertaken.

There is regular sea communication with other Italian, and with 5 Mediterranean, ports.

*Chart 3937.***Porto di Crotone to Punta Alice.—Coast.—Anchorage.—**

Between the root of Molo Giunti at Porto di Crotone and Punta Alice, about 19 miles northward, the coast consists of a beach composed of 10 sand and shingle alternately, and is free from off-lying dangers.

Fiume Neto flows into the sea through a wooded point about 7 miles northward of Porto di Crotone; the depths increase abruptly at a short distance off its mouth. An iron railway bridge with two red silos close to it, situated about $1\frac{1}{2}$ miles westward of the river mouth, 15 is prominent from south-eastward, while three tall white buildings, about $1\frac{1}{2}$ miles west-north-westward of its mouth, and a yellow railway station surrounded by white houses, about one mile farther northward, are also prominent from seaward.

The village of San Nicola dell' Alto, situated about 10 miles north- 20 westward of the mouth of Fiume Neto, stands at an elevation of 1,890 feet (576^m1) on a saddle in the mountains between a sharp peak and a rounded summit surmounted by a white church; this church is very prominent and may be seen from a considerable distance in all 25 directions.

A rock with a depth of about 3 feet (0^m9) over it, on which the sea nearly always breaks, lies about half a cable north-north-eastward of the northern entrance point of Fiume Neto.

Torre Borgatorio, situated on a gentle slope near the coast about $3\frac{1}{4}$ miles north-westward of the mouth of Fiume Neto, is a well- 30 preserved square building surmounted by a white hut; there is a red hut close northward of the tower. The town of Strongoli stands at an elevation of 1,112 feet (338^m9) on a flat-topped summit about $2\frac{1}{4}$ miles west-north-westward of Torre Borgatorio and is dominated by a castle near the southern end of the town. This castle is an 35 excellent landmark and may be distinguished from the vicinity of Capo Colonne; a cupola may be seen amongst the buildings of Strongoli. The disused signal station on Serra Sanguigna, *see* below, situated about $8\frac{1}{2}$ miles north-north-westward of Torre Borgatorio, may also be distinguished from a considerable distance in all directions. 40

Vessels with local knowledge may obtain anchorage in Fossa di Borgatorio, eastward of Strongoli, in depths of from $4\frac{1}{2}$ to 5 fathoms (7^m8 to 9^m1), sand, sheltered from winds from the western semi-circle.

Torre Melissa (*Lat. 39° 18' N., Long. 17° 07' E.*), a large building in the shape of a truncated cone, stands at an elevation of 151 feet 45 (46^m0) on the coast about 3 miles northward of Torre Borgatorio. On the beach about half a mile northward of Torre Melissa is a group of houses, amongst which is a church with a white façade and a spire.

Caution.—In 1943, it was reported that the offshore depths between the mouth of Fiume Neto and Torre Melissa were appreciably less than 50 those shown on the chart. Some depths of 11 fathoms (20^m1) may be reduced by $2\frac{1}{4}$ fathoms (4^m0), and, in addition, there may be patches dangerous to deep-draught vessels. Such vessels should give a berth of at least one mile to this stretch of coast.

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3937.

Coast.—Anchorage.—Torre Nuova, situated on the beach about 3½ miles north-north-eastward of Torre Melissa, is a square ruined building of a dark-red colour with a long iron bridge north-westward
5 of it.

Cirò Marina is a town which extends along the beach about one mile north-north-eastward of Torre Nuova and about 2 miles south-westward of Punta Alice. A large castle stands half-way up a hill about one mile west-south-westward, and the white enclosing wall of
10 a cemetery is situated about one mile northward of the village. The coast in this vicinity may be approached to within a short distance, and there are depths of 3 fathoms (5^m5) about one cable offshore. The beach is sandy and suitable for hauling up boats.

Vessels with local knowledge may obtain anchorage off Cirò Marina ;
15 the anchorage affords shelter from northerly winds, but is exposed to those from south-eastward.

The town of Cirò, situated at an elevation of 1,152 feet (351^m1) on a green hill about 3 miles westward of Cirò Marina, is prominent from seaward and visible from a considerable distance ; amongst the
20 houses is a large building with two cupolas. On the summit of Serra Sanguigna, a bare, dome-shaped hill about half a mile west-north-westward of Cirò, is a disused signal station, painted white, which stands out clearly against the skyline and can be seen from a considerable distance in all directions.

Punta Alice.—Light.—Punta Alice is low and steep-to ; its outer part is bare and sandy for about 4 cables within its extremity, westward of which the ground is covered with vegetation.

A light is exhibited, at an elevation of 70 feet (21^m3), from a black framework structure 61 feet (18^m6) in height, situated about 4 cables
30 south-westward of the extremity of Punta Alice ; a disused light-house, consisting of an octagonal tower on a dwelling 60 feet (18^m3) in height, stands near the extremity of the point.

Currents.—A west-going current sometimes becomes established in the vicinity of Punta Alice, which, off the point, divides into two
35 branches, one of which turns southward and the other north-westward along the coast.

Punta Alice to Capo Trionto.—Coast.—Anchorage.—Dangers.
—From Punta Alice, the coast trends north-westward for about 22 miles to Capo Trionto ; on the south-eastern part of this stretch, the
40 following landmarks may be identified :—The previously described town of Cirò, *see* above ; the village of Crucoli, built like Cirò, on a green hill, 1,204 feet (367^m0) high and situated about 7½ miles west-north-westward of Punta Alice, with a square tower and two cupolas northward of it, in the village ; the village of Terravecchia, situated
45 at an elevation of 1,532 feet (472^m0) on a summit covered with dark vegetation, about 3½ miles north-westward of Crucoli and about 2 miles inland, with a prominent church surmounted by a cupola ; Monte Acquaviva, 1,465 feet (445^m0) high, about one mile north-westward of Terravecchia ; and the prominent, tree-covered summit of Pietra
50 dell' Avoltoio, 2,047 feet (623^m9) high, about 2 miles westward of Monte Acquaviva (*Lat.* 39° 29' N., *Long.* 16° 56' E.).

Torre Vecchia, a square building, is situated on the coast about 1½ miles westward of Punta Alice, and about half a cable farther westward is a small chapel ; both the tower and the chapel are visible

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3937.

from a considerable distance northward or southward, even before Punta Alice light-structure appears above the horizon.

Vessels with local knowledge may obtain anchorage sheltered from south-westerly winds off the coast abreast the small chapel. 5

From Torre Vecchia, the coast trends north-westward in a slight curve for about 8 miles to Punta Fiumenica. The village of Torretta, situated on the coast about 2 miles south-south-eastward of Punta Fiumenica and backed by green hills, is prominent from seaward. Casa Cassia, a large, dark building, is situated on a hill 213 feet (64^m9) 10 high, about one mile north-westward of Torretta and about half a mile inland. Punta Fiumenica, through which flows a river of the same name, is low and on it stands Torre Policaretto which, from an offing, appears to rise from the sea; this tower was originally square, but in 1947 was in ruins and consisted of two entirely separate towers which 15 in clear weather are visible from a distance of about 10 miles northward or south-eastward.

A bank on which the depths are less than 5 fathoms (9^m1) fronts the coast between Torretta and Punta Fiumenica and extends as much as 1½ miles offshore eastward of Casa Cassia. 20

The village of Cariati is situated about 3½ miles west-north-westward of Punta Fiumenica at the foot of Monte Acquaviva. It stands on a plateau, 230 feet (70^m1) high, with steep sides. The houses in this village are a dark colour, it has a bastioned wall, and there is a tiled cupola in it; its prominence from seaward depends on the 25 conditions of light and it is sometimes difficult to distinguish against the mountainous background.

Cariati Marina is situated on the coast close eastward of Cariati and may be identified by its white houses and by the chimneys of several factories. North-eastward of Cariati Marina and about 2½ cables 30 offshore, is a shoal lying parallel with the beach with a depth of 1½ fathoms (2^m7) over it. There are depths of about 2½ fathoms (4^m1) between the shoal and the beach, decreasing towards the latter.

Vessels with local knowledge may obtain anchorage sheltered from offshore winds off Cariati Marina, in depths of from 8 to 13 fathoms 35 (14^m6 to 23^m8), good holding ground.

Between Cariati Marina and Capo Trionto, about 11 miles north-westward, the coast is fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends in places about three-quarters 40 of a mile offshore.

About 3½ miles westward of Cariati Marina and about 2 miles inland, is the village of San Morello; it stands on a rugged hill at an elevation of 1,312 feet (399^m9), and may be identified by a large white building in front of it.

The village of Calopezzati, about 3½ miles south-south-eastward of 45 Capo Trionto, stands on a hill, 712 feet (217^m0) high. A square tower surmounted by a spire, and a prominent castle with large towers at its corners, may be distinguished in the village from any direction. When approaching from southward, a small white tower will be seen north-eastward of the village with some white huts on the coast in 50 front of it.

Capo Trionto.—Light.—Capo Trionto (*Lat.* 39° 37' N., *Long.* 16° 47' E.) is low, rounded and steep-to; a river of the same name flows out through the point, which latter is covered with thick 55 vegetation.

Charts 198, 1800, 1440, 2158a, 2158b, 449.

Chart 3937.

A light is exhibited, at an elevation of 69 feet (21^m0), from a white circular tower, 59 feet (18^m0) in height, situated on the northern extremity of Capo Trionto. *See sketch facing page 477.*

- 5 **Capo Trionto to Schiavonea.—Coast.—Anchorage.**—From Capo Trionto light-structure, the coast, which consists of a beach backed by thick vegetation, trends westward for about 5½ miles to Sant' Angelo di Rossano, a village which may be identified from about 3 miles offshore by the chimneys of its factories, as the few houses on the beach are low and, owing to the vegetation, can only be distinguished on a close approach. Along this stretch of coast, the beach is undulating and is interrupted by alluvial deposits brought down by the numerous rivers and streams in the vicinity. During winter, the beach is inaccessible near the mouths of these torrents.
- 15 The town of Rossano, which in 1941 had a population of about 10,000, stands at an elevation of 974 feet (296^m9) on an olive-covered hill about 2½ miles southward of Sant' Angelo di Rossano. It may be identified by some groups of white houses forming part of the town, and by a cupola in a cemetery in front of, and below, the town.
- 20 Rossano makes a good landmark for vessels bound for Sant' Angelo di Rossano, and should be kept bearing about 180° by vessels from northward bound for the latter village.

The remains of a pier, consisting of several iron posts, extend from the beach in front of the village of Sant' Angelo di Rossano, and should be avoided by all boats.

- Vessels with local knowledge, engaged in the export of local produce, anchor about three-quarters of a cable off the beach in front of the village, with a hawser secured to a mooring post on the beach; they should always be ready to leave at the first sign of an onshore wind.
- 30 From Sant' Angelo di Rossano the coast trends west-north-westward for about 5 miles to the village of Schiavonea, in which a large white square tower stands amongst the houses; both the tower and the village show up well against a background of trees and are visible from a distance of about 10 miles seaward. In summer, the village is a popular bathing resort.

Schiavonea is the seaport for the town of Corigliano Calabro (Corigliano), which in 1941 had a population of about 13,400; it stands on a hill 718 feet (219^m2) high, about 3½ miles south-south-westward of Schiavonea, and is dominated by a prominent white castle, surrounded by a small square tower.

- Vessels with local knowledge may obtain anchorage off Schiavonea, in depths of from 8 to 11 fathoms (14^m6 to 20^m1), with the castle at Corigliano Calabro in line with the western extremity of Schiavonea village (*Lat. 39° 39' N., Long. 16° 33' E.*).
- 45 **Currents.**—The currents off this part of the coast are entirely influenced by the winds and are appreciable, especially during winter; during this latter season there is usually a south-east-going current off Sant' Angelo di Rossano.

Schiavonea to Capo Spulico.—Coast.—Anchorage.—From Schiavonea, the coast trends northward for about 4 miles to Punta Coscio and thence trends in a wide bight to Capo Spulico, about 15 miles north-north-eastward.

Fiume Crati flows into the sea at Punta Coscio; its entrance, about 100 feet (30^m5) wide with depths of from 6 to 10 feet (1^m8 to 3^m0), is

Chart 3937.

divided into two channels by a small island. After heavy rain, the water off the mouth of this river is discoloured for about one mile seaward. The coast at the mouth of the river is flat and covered with thick vegetation. 5

Casa Bianca is a building situated about $1\frac{1}{2}$ miles west-north-westward of Punta Coscio (*Lat.* $39^{\circ} 43' N.$, *Long.* $16^{\circ} 32' E.$) and about a quarter of a mile inland. Vessels with local knowledge may obtain anchorage in depths of from 11 to 16 fathoms (20^m1 to 29^m3), about half a mile offshore north-eastward of Casa Bianca. It is locally 10 reported that this anchorage is tenable with moderately strong onshore winds.

Torre Cerchiara, about $4\frac{1}{2}$ miles north-north-westward of Punta Coscio, is a low, light-coloured building standing on the coast; it consists of two blocks, one of which is circular and the other square. 15 Northward of it is a prominent red, three-storeyed building surrounded by low buildings with red roofs.

Small local craft engaged in the export of liquorice obtain anchorage off Torre Cerchiara, sheltered from winds from the western semi-circle.

Torre Villapiana or Torre Saraceno, dark, circular and surmounted 20 by a small watch tower, stands near the coast about 3 miles north-north-eastward of Torre Cerchiara and is half-hidden by vegetation; close to it is a small iron bridge and a short distance farther inland is a concrete bridge with two arches.

The village of Villapiana (chart 198) stands on a hill 682 feet (207^m9) 25 high, about $2\frac{1}{4}$ miles westward of Torre Villapiana; a church with a spire which is prominent from south-eastward may be seen amongst the dark houses. The village stands on the northern bank of Torrente Satanasso, a rapid and tortuous river which enters the sea about $1\frac{1}{2}$ miles south-westward of Torre Villapiana; close north-north-eastward of this tower is the wide mouth of Fiume Saraceno, the bed 30 of which, when dry, is visible from a considerable distance seaward.

The village of Trebisacce is situated on a spur, 240 feet (73^m1) high, rising steeply from the coast about 2 miles north-north-eastward of Torre Villapiana. A church with a belfry and cupola is prominent 35 in the village; in clear weather Trebisacce is visible from a distance of about 12 miles seaward.

Trebisacce Marina is situated on the beach close south-eastward of Trebisacce; among its houses is the tall chimney of a factory and on the beach is a long white wall with arches and an iron bridge. 40

An iron pier, about 164 feet (50^m0) long with a depth of 11 feet (3^m4) alongside its head, extends from the beach fronting Trebisacce Marina; in 1946, this pier was reported to be in a very poor state of repair.

The coast in this vicinity is low, of an alluvial nature and intersected 45 by torrents.

Vessels with local knowledge may obtain anchorage off Trebisacce Marina; the bottom is sandy and the holding ground good. Large vessels anchor in depths of about 11 fathoms (20^m1) about one mile offshore. The depths decrease towards the beach, and there are 50 depths of one fathom (1^m8) about $1\frac{1}{4}$ cables offshore. Local produce is exported from Trebisacce during the summer.

Torre Albidona stands at an elevation of 259 feet (78^m9) on the edge of a steep landslip about 3 miles north-eastward of Trebisacce; it is

Charts 198, 1440, 2158a, 2158b, 449.

Chart 3937.

circular and is prominent from seaward. The village of Albidona is situated at an elevation of 2,658 feet (810^m1) on a summit about 4½ miles westward of Torre Albidona.

- 5 From Torre Albidona, the coast trends north-eastward for about 4 miles to Capo Spulico. The village of Amendolara stands at an elevation of 774 feet (235^m9) on a hill about 2 miles westward of Capo Spulico. A square belfry may be seen amongst its houses and there is a large, dark convent at the northern end of the village. The hamlet
10 of Amendolara Stazione consists of a few houses on the beach about 1½ miles south-westward of Capo Spulico (*Lat.* 39° 57' N., *Long.* 16° 38' E.). A wide and easily accessible beach extends between the mouth of Fiume Straface, close south-westward of Amendolara Stazione, and the mouth of Fiume Ferro, about half a mile northward
15 of Capo Spulico.

Capo Spulico is low, rounded and partly covered with bushes. Torre Spulico, circular and in ruins, stands close southward of the cape; this tower may be identified by its distinctive shape, one side of it being broken away.

- 20 Small vessels with local knowledge may obtain anchorage southward of Capo Spulico, sheltered from winds between west and north-north-east; the bottom is sand.

Off-lying bank.—Banco di Amendolara, with a least depth of 14 fathoms (25^m6), over it, lies about 6¾ miles south-eastward of Capo
25 Spulico.

Charts 3937 and 1641.

- Capo Spulico to the mouth of Torrente Canna.—Coast.—Target.—Anchorage.**—Between Capo Spulico and the mouth of
Torrente Canna, about 8¾ miles northward, the coast is high and is
30 fringed with numerous rocks close inshore; the 5-fathom (9^m1) contour line passes about half a mile offshore along this stretch of coast.

The village of Roseto Capo Spulico is situated on a green hill 689 feet (210^m0) high, about 2 miles north-north-westward of Capo Spulico. A castle of the same name, dark and prominent from seaward, stands
35 on the coast about three-quarters of a mile south-eastward of the village; a target, consisting of a hulk, is moored about 2½ miles east-north-eastward of this castle. During summer, small craft with local knowledge find shelter from westerly winds close inshore abreast the castle.

40 Chart 1641.

The village of Montegiordano, standing on a mountain of the same name, 1,965 feet (598^m9) high, about 6¾ miles north-westward of Capo Spulico, may be identified by a spire which rises in the middle of the buildings. Montegiordano Marina is situated on the coast about
45 3 miles eastward of Montegiordano; a prominent shed, situated close to the overhead cableway of a cement factory, and two pairs of low, grey chimneys in the village, may assist in identifying it.

Scoglio Cervaro is a low blackish rock, situated close inshore about 2¼ miles northward of Montegiordano Marina; it shows up against a
50 light-coloured beach behind it and may be distinguished from a distance of about 6 miles in clear weather.

The village of Rocca Imperiale stands at an elevation of 653 feet (199^m0) about 2¼ miles north-westward of Scoglio Cervaro; its greyish houses, dominated by a prominent castle, are grouped together on a

Charts 198, 1440, 2158a, 2158b, 449.

Chart 1641.

hillside, but owing to intervening heights, neither village nor castle is visible from seaward until well northward of Capo Spulico.

Marina di Rocca Imperiale is situated on the coast about $1\frac{1}{2}$ miles northward of Scoglio Cervaro. It consists of a group of buildings, 5 painted either white or red, amongst which stands the large and prominent Torre Canna, dark, square, well-preserved and surmounted by two white watch-towers with a tall, white square column. A tank, and a railway station painted dark yellow and situated close northward of the village, are also prominent. 10

Vessels with local knowledge may obtain anchorage off the coast in front of Torre Canna, in depths of about 8 fathoms (14^m6), mud and sand, good holding ground.

Mouth of Torrente Canna to Torre Scanzano.—Coast.—Anchorage.—Between the mouth of Torrente Canna and Punta 15 Rondinella, about 34 miles north-eastward, the coast is low, marshy, wooded in places and intersected by numerous rivers and torrents.

The town of Rotondella (*Lat.* $40^{\circ} 10' N.$, *Long.* $16^{\circ} 32' E.$), situated at an elevation of 1,890 feet (576^m1), on a rounded summit about 6 miles north-westward of Torre Canna, is visible from a considerable 20 distance seaward.

Torre Bollita stands near the coast about $2\frac{1}{4}$ miles north-eastward of Torre Canna; it is circular, squat and dark, with its eastern side broken away on top. This tower is difficult to distinguish, but the railway station of Nova Siri, a tall red building surrounded by houses 25 and situated about one cable north-north-westward of the tower, can always be identified.

The coast between Torre Bollita and Punta Rondinella is for the most part uninhabited and the anchorages off it are only frequented by local sailing craft which, owing to easterly winds, are unable to reach Taranto. The mouths of the rivers which enter the sea between 30 Torre Bollita and Torre Mattoni, about 19 miles north-north-eastward, are hidden by low scrub and are difficult to distinguish.

About $2\frac{1}{2}$ miles east-north-eastward of Torre Bollita is the mouth of Fiume Sinni, which enters the sea through a sandy point projecting 35 some distance seaward from the adjoining coastline. The sea is sometimes discoloured for a distance of about 2 miles off the mouth of this river, but there are depths of $5\frac{1}{2}$ fathoms (10^m1) at a distance of half a mile off the point.

Between the mouth of Fiume Sinni and that of Fiume Agri, about 40 4 miles north-north-eastward, the land close within the coast is mostly marshy with some lagoons and swamps, whilst farther inland are extensive woods. In 1951, it was reported that, owing to deposit brought down by Fiume Agri, the coastline adjoining the mouth of that river had extended about half a cable seaward of that shown on the chart. 45

Torre Mozza, situated on the swampy ground about one mile west-north-westward of the mouth of Fiume Agri, is only visible from a short distance.

The town of Montalbano Ionico is situated at an elevation of 958 feet (292^m0), on a bare hill about $8\frac{1}{2}$ miles north-westward of Torre Mozza, 50 and is dominated by a tall, square tower.

The village of Policoro, about $1\frac{3}{4}$ miles westward of Torre Mozza, consists of low farmhouses partly hidden by woods, amongst which stands a tall, dark and massive building resembling a large castle.

Chart 1641.

The village of Scanzano, situated about $2\frac{1}{2}$ miles northward of Torre Mozza, consists of low, whitish houses standing at an elevation of 75 feet (22^m9) and dominated by a large reddish building, surmounted
5 by a small tower and resembling a castle.

Torre Scanzano, standing in an isolated position close to the beach about $3\frac{1}{4}$ miles north-north-eastward of Torre Mozza, is shaped like a truncated pyramid and surmounted by a small building; its eastern side is painted with black and white horizontal bands.

10 Vessels with local knowledge may obtain anchorage in depths of about 7 fathoms (12^m8) about $1\frac{1}{2}$ miles offshore eastward of Torre Scanzano; in winter, it is advisable to anchor farther offshore. It is dangerous to remain at this anchorage with east-south-easterly or southerly winds.

15 **Torre Scanzano to Ginosa.—Coast.—Beacon.—Anchorage.**—Fiume Cavone flows into the sea about 2 miles north-eastward of Torre Scanzano. This locality can be identified by Castello di San Basilio, which stands at an elevation of 220 feet (67^m1), about 4 miles north-north-westward of Torre Scanzano and about $3\frac{1}{2}$ miles inland.

20 The town of Pisticci, which in 1941 had a population of about 11,000, stands at an elevation of 1,188 feet (362^m1), about 12 miles north-westward of Torre Scanzano, and may be identified by its whitish houses.

A group of houses named Torremare (*Lat. $40^{\circ} 22' N.$, Long. $16^{\circ} 49' E.$*) is situated about $5\frac{1}{2}$ miles north-north-eastward of the mouth of Fiume Cavone, and about 2 cables eastward of the group is a railway station with a large and prominent water tank.

A pyramidal beacon, painted in black, white and red horizontal bands, and 20 feet (6^m1) in height, is situated about one mile southward
30 of Torremare.

Vessels with local knowledge may obtain anchorage off the coast close northward of the mouth of Fiume Cavone, and also off the coast east-south-eastward of Torremare.

Torre Mattoni, square and slightly smaller and darker than Torre
25 Scanzano, stands in an isolated position on the beach about 3 miles north-eastward of Torremare; a prominent group of dark-red, two-storeyed houses is situated about three-quarters of a mile west-south-westward of this tower. The railway station of Ginosa, situated about 2 miles north-eastward of Torre Mattoni, is surrounded by a group of
40 red and yellow houses.

Ginosa light.—Anchorage.—A light is exhibited, at an elevation of 49 feet (14^m9), from a white tower on a white two-storeyed house, situated close southward of Ginosa railway station.

Vessels with local knowledge may obtain anchorage off the coast
45 east-south-eastward of Ginosa railway station.

Ginosa to Punta Rondinella.—Coast.—Off-lying danger.—Between Ginosa and Punta Rondinella, about $13\frac{1}{2}$ miles east-north-eastward, the coast forms a wide bight. Fiume Lato flows into the sea about 6 miles north-eastward of Ginosa and is crossed by a bridge
50 close within its mouth. Torre Lato, situated close westward of the southern entrance point of Fiume Lato, is square, well-preserved and painted in broad black and white horizontal bands; it shows up well against a wooded background.

North-eastward of Torre Lato the beach is low and is fringed by a

Charts 198, 1440, 2158a, 2158b, 449.

Chart 1641.

bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as three-quarters of a mile offshore about $1\frac{1}{2}$ miles north-westward of Punta Rondinella. Within the beach, the ground is low, wooded and intersected with marshes, and behind the woods there is a cultivated plain dotted with houses. Northward of this plain, the following towns are prominent :—Castellaneta, about $8\frac{1}{2}$ miles north-north-westward of Torre Lato, at an elevation of 804 feet (245^m1) ; Mottola, about 9 miles north-north-eastward of Torre Lato and on a summit 1,270 feet (387^m1) high, which being higher than the surrounding hills is generally visible when other peaks are obscured by fog ; and Massafra, larger than Mottola, about $8\frac{1}{4}$ miles north-eastward of Torre Lato, at an elevation of 361 feet (110^m0) and dominated by a cupola.

Secca Armeleia, a shoal of rocks and weed, over which there are depths of from $4\frac{1}{2}$ to 10 fathoms (8^m2 to 18^m3), lies between 2 and 4 miles eastward of Torre Lato, with its shoalest head about $3\frac{1}{2}$ miles eastward of that tower. During strong southerly winds, the sea breaks on this shoal.

Charts 1641 and 1643.

Torpedo range.—Buoys.—There is a torpedo range along the line joining Torre Lato and Torre Montello, about 9 cables north-north-eastward of Punta Rondinella ; the western end is marked by a large conical buoy moored about $1\frac{1}{2}$ miles eastward of Torre Lato, and the eastern end by two pairs of conical buoys moored nearly $2\frac{1}{2}$ miles westward of Torre Montello ; between the eastern and western ends the range is marked, at intervals of about $5\frac{1}{2}$ cables, by conical buoys moored either singly or in pairs.

Chart 1643.

TARANTO.—General remarks.—The port of Taranto consists of Mar Grande, an outer harbour entered between Punta Rondinella and Capo San Vito (*Lat.* $40^\circ 24' N.$, *Long.* $17^\circ 12' E.$), about 4 miles south-south-eastward, and Mar Piccolo, an inner harbour separated from the head of Mar Grande by a narrow neck of land through which are two canals. The north-western canal is shoal and available only for boats, but Passagio Piccolo, the south-eastern canal, is available to vessels of any size. The town of Taranto lies at the head of Mar Grande and extends across the neck of land separating that harbour from Mar Piccolo.

Mar Grande is protected from westward by Isolotto San Pietro and Isolotto San Paolo, situated about $1\frac{1}{2}$ miles south-westward and $2\frac{1}{2}$ miles southward, respectively, of Punta Rondinella, and by breakwaters which connect the former islet with Punta Rondinella and with Isolotto San Paolo. It is protected from southward by a promontory terminating in Capo San Vito and by a breakwater which extends towards Isolotto San Paolo from a position about one mile north-north-eastward of Capo San Vito, leaving an entrance about 8 cables wide.

The principal landmarks by which the locality may be identified from an offing are :—The high land north-westward of the town of Taranto, on which stand Mottola and Castellaneta, *see* above ; westward of the town, Torre Rondinella and Torre Montello, the former situated on the extremity of Punta Rondinella and the latter about

Charts 1641, 198, 1440, 2158a, 2158b, 449.

Chart 1643.

9 cables farther north-north-eastward ; south-westward of the town, a round tower and a disused framework light-structure on Isolotto San Pietro ; southward of the town, Capo San Vito light-tower, close
 5 northward of the extremity of that cape ; and south-eastward of the town, the castles of Roccaforzata and Leporano (page 509).

On a close approach, the belfry of the cathedral, situated in the western part of the town on the neck of land separating Mar Grande and Mar Piccolo ; Castel Sant' Angelo, about $3\frac{1}{2}$ cables south-eastward
 10 of the cathedral ; and a tall chimney on the eastern side of Mar Grande, about $1\frac{1}{2}$ miles south-eastward of Castel Sant' Angelo, are all good landmarks.

Approaches to Mar Grande.—Islets and breakwater.—Dangers.—Punta Rondinella, the northern entrance point of Mar
 15 Grande, is low, narrow and surmounted by the square Torre Rondinella. Torre Montello, square, slender, and with three rows of windows, stands on a hill 89 feet (27^m1) high, about 9 cables north-north-eastward of the point, and is conspicuous from southward.

Isolotto San Pietro, the larger of the two islets on the western side
 20 of Mar Grande, is low and rocky ; it lies with Punta Lo Scanno, its northern extremity, about $1\frac{1}{2}$ miles south-westward of Punta Rondinella. Several buildings stand on the islet, amongst them a conspicuous round tower about $3\frac{1}{2}$ cables southward of Punta Lo Scanno, and a disused framework light-structure on Punta La Forca, the western
 25 extremity of the islet, situated about one mile west-south-westward of Punta Lo Scanno. On the eastern side of the islet, close north-westward of a group of prominent reddish sheds, is a masonry landing pier with a crane on its head, close to which are depths of 13 feet (4^m0). The point on which are the reddish sheds is fringed by a shoal
 30 bank and should not be closely approached.

A bank on which the depths are 3 fathoms (5^m5) or less surrounds Isolotto San Pietro and extends as much as three-quarters of a mile off its northern, $1\frac{1}{2}$ cables off its southern, and 4 cables off its eastern, side. Two small patches, with depths of 2 and $2\frac{1}{2}$ fathoms (3^m7 and
 35 4^m6), respectively, over them, lie between one mile and $1\frac{1}{4}$ miles north-north-westward of Punta Lo Scanno. A shoal with a least depth of $4\frac{1}{4}$ fathoms (7^m8) over it lies about one mile north-north-westward of Punta La Forca and a $5\frac{1}{4}$ -fathom (10^m5) patch lies about $1\frac{1}{2}$ miles north-westward of the same point. Numerous detached shoals with
 40 depths of from 5 to 6 fathoms (9^m1 to 11^m0) over them, the positions of which can best be seen on the chart, lie between about 8 cables north-north-westward and the same distance south-south-westward of Punta La Forca.

The area between Punta Rondinella (*Lat.* $40^\circ 29' N.$, *Long.* $17^\circ 11'$
 45 *E.*) and Punta Lo Scanno, which is mostly shallow and encumbered with shoals, is closed by a curved breakwater through which, about $3\frac{1}{4}$ cables south-westward of Punta Rondinella, there is a passage about half a cable wide with depths of 11 feet (3^m4) in it.

Isolotto San Paolo lies about half a mile south-eastward of Isolotto
 50 San Pietro with which it is connected by a breakwater. It is surrounded by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as $2\frac{1}{2}$ cables offshore northward of the islet. A mole extends about $1\frac{1}{4}$ cables east-south-eastward from the south-eastern extremity of the islet, and, on account of its submerged

Charts 1641, 198, 1440, 2158a, 2158b, 449.

Chart 1643.

foundations, vessels should give the head of this mole a berth of at least one cable. In the middle of the northern side of the islet is a boat harbour protected by two moles, with depths of 12 feet (3^m7) in it; this harbour is reserved for tugs and Italian Government craft.

Capo San Vito, the southern entrance point of Mar Grande, situated about 2 miles south-eastward of Isolotto San Paolo, is low and is dominated by a lighthouse, a signal station, and the massive Torre San Vito, light-coloured and square, with steps leading to a door on its north-western side.

Secca di San Vito, with depths of less than 3 fathoms (5^m5) over it, fringes the promontory which terminates south-westward in Capo San Vito and extends about 9 cables west-north-westward from a position on the coast about one mile north-north-eastward of the cape. Diga di San Vito, a curved breakwater, extends west-north-westward close to the south-western edge of the shoal to a position about 1½ miles north-north-westward of Capo San Vito.

Lights. — Radiobeacon. — Signal station. — Buoy.—A light is exhibited, at an elevation of 151 feet (46^m0), from a yellowish octagonal tower on a white dwelling, 141 feet (43^m0) in height, situated about 2 cables northward of the extremity of Capo San Vito. A radiobeacon transmits from the light-structure.

A light is exhibited, at an elevation of 49 feet (14^m9), from a concrete tripod, situated on the head of the mole extending east-south-eastward from Isolotto San Paolo.

A light is exhibited, at an elevation of 49 feet (14^m9), from a grey, pyramidal, iron framework structure, 49 feet (14^m9) in height, situated on the head of Diga di San Vito. When entering Mar Grande at night, this light is difficult to distinguish against the lights of the town behind it.

A light is exhibited, at an elevation of 16 feet (4^m9), from each of two white concrete huts, 15 feet (4^m6) in height, situated one on each side of the passage through the breakwater about ¾ cables south-westward of Punta Rondinella.

A signal station, consisting of a white square tower, stands close westward of Capo San Vito light-structure; vessels entering harbour must make their numbers to this signal station. Messages from vessels will be transmitted by telegraph.

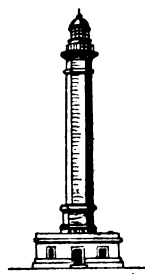
A buoy is moored about three-quarters of a mile westward of Capo San Vito light-structure.

Obstruction.—Prohibited area and anchorage.—A net obstruction extends about 2½ cables northward from a position about 2 miles north-westward of Punta La Forca; a group of four buoys is moored about 4½ cables eastward of this obstruction.

A prohibited area, indicated by pecked lines on the chart, extends about 1½ miles southward of the southern side of Isolotto San Pietro.

Anchorage is prohibited within an area indicated by pecked lines on the chart, extending about one mile northward, westward and southward, and about 1½ miles south-eastward and eastward, of Capo San Vito (*Lat.* 40° 24' N., *Long.* 17° 12' E.).

Pilotage.—Pilotage is compulsory for merchant vessels entering Mar Grande and for all vessels authorised to enter or leave Mar Piccolo. Merchant vessels wishing to enter Mar Piccolo must request a pilot



Capo San Vito
light-tower.

Chart 1643.

from the Captain of the Port, who will inform vessels of the time when they must be ready to move.

- Pilots will meet vessels by day or at night in motor or pulling boats ;
 5 by day the pilot boat displays flag J of the International Code of Signals, with the letter P in the centre ; at night, a *white* light above a *red* light is exhibited at the masthead.

Mar Grande.—Lights.—Dangers.—Light-buoy.—Mar Grande, the outer harbour of the port of Taranto, is entered between the
 10 head of Diga di San Vito and the head of the mole extending east-south-eastward from Isolotto San Paolo, about 8 cables west-north-westward. It is a spacious anchorage for vessels of any size with depths of from 11 to 20 fathoms (20^m1 to 36^m6) in the fairway between the entrance and a position close southward of the entrance to Passagio
 15 Piccolo, about 3 miles north-eastward.

From the root of Diga di San Vito, the eastern side of Mar Grande trends eastward, northward and north-north-westward in a wide curve to the entrance to Passagio Piccolo, about 3½ miles north-north-eastward.

- 20 A light is occasionally exhibited, at an elevation of 51 feet (15^m5), from a square column, painted in black and white vertical stripes and surmounted by an iron staff and vane, 38 feet (11^m6) in height, situated on the beach about 4 cables eastward of the root of Diga di San Vito.

Pontile San Vito, a small pier, projects about three-quarters of a
 25 cable north-eastward from the beach about 5½ cables eastward of the root of Diga di San Vito ; a rough breakwater extends parallel with the pier and about 16 feet (4^m9) westward of it. Tugs and large boats can berth alongside its eastern side.

- Two lights, disposed vertically, are exhibited from the head of
 30 Pontile San Vito.

Secca della Tarantola, a narrow shoal about one mile long in a north-north-westerly and south-south-easterly direction, and on which there are depths of from 1½ to 3½ fathoms (2^m7 to 6^m9), lies with its northern extremity about 1½ miles north-eastward of the head of Diga di San
 35 Vito. Diga di Tarantola, a slightly-curved breakwater, extends along Secca della Tarantola to its northern extremity from a position on the coast about 1½ miles east-north-eastward of the root of Diga di San Vito (*Lat.* 40° 25' N., *Long.* 17° 13' E.).

- A light is exhibited, at an elevation of 34 feet (10^m4), from a quad-
 40 rangular iron pyramid on piles, 34 feet (10^m4) in height, situated on the head of Diga di Tarantola. Deep-draught vessels should give this light-beacon a berth of at least one cable.

There are two passages through Diga di Tarantola : the northern passage is about 77 yards (70^m4) wide with depths of 1½ fathoms
 45 (3^m2) in it, and lies about 2½ cables southward of the light-beacon ; the southern passage lies about 2½ cables from the root of the breakwater and is about 109 yards (99^m7) wide with depths of from 4½ to 5½ fathoms (7^m8 to 9^m6) in it.

- Between Diga di San Vito and Diga di Tarantola, the southern
 50 shore of Mar Grande is fronted by a bank which, with depths of less than 5 fathoms (9^m1) over it, extends in places to a line joining the heads of these breakwaters.

Pontile Chiapparo, a pier with two arms branching from its head and forming a Y, extends about 1½ cables north-westward from the

Charts 1641, 198, 1440, 2158a, 2158b, 449.

Chart 1643.

coast about 7 cables north-eastward of the root of Diga di Tarantola ; there are depths of about $5\frac{1}{2}$ fathoms (10^m) alongside both arms. Lights are occasionally exhibited from the pier head and from the head of each arm.

Three small masonry piers, for the use of boats from vessels moored at the buoys in Mar Grande, extend from the shore abreast the town of Taranto between the entrance to Passagio Piccolo and a point about three-quarters of a mile south-eastward. Two lights, disposed horizontally, are exhibited from iron posts on the head of Pontile Rota, the north-westernmost of these piers, situated about $2\frac{1}{2}$ cables south-eastward of the entrance to Passagio Piccolo.

Porto Mercantile (*Lat.* $40^\circ 29' N.$, *Long.* $17^\circ 14' E.$) is situated on the northern side of Mar Grande, close westward of the town of Taranto and about 2 miles eastward of Punta Rondinella. Westward of Porto Mercantile, the northern shore is fronted by an extensive bank which, with depths of less than 5 fathoms (9^m) over it, extends about one mile offshore. Secca della Sirena, a narrow extension southward of this bank, with a least depth of $3\frac{3}{4}$ fathoms (6^m) over it, lies about $1\frac{1}{4}$ miles north-westward of the head of Diga di Tarantola. A light-buoy, painted red and exhibiting a *red flashing* light showing a *short flash every three seconds*, is moored close off the southern end of Secca della Sirena.

Isolotto San Nicolicchio lies close offshore about 8 cables eastward of Punta Rondinella ; the passage between this islet and the coast is only possible for boats with local knowledge. About midway along the coast between the islet and the point is a masonry pier which can be used by boats.

The north-western part of Mar Grande, between Punta Rondinella and Isolotto San Paolo, is fronted by an extensive bank which, with depths of less than 5 fathoms (9^m) over it, extends in places about $1\frac{1}{4}$ miles offshore.

Mooring buoys.—Demagnetisation ranges.—There are numerous mooring buoys in Mar Grande the positions of which can best be seen on the chart.

Two demagnetisation ranges, marked by buoys, are situated eastward of Diga di Tarantola. The range for small vessels lies about 4 cables westward of the head of Pontile Chiapparo, and the range for large vessels lies about a similar distance farther northward.

Anchorage.—Prohibited anchorage and area.—Obstructions.—The anchorage for merchant vessels lies north-eastward of Isolotto San Paolo and there is a prohibited anchorage area on its western side ; the limits of these areas are indicated by pecked lines on the chart.

There is a prohibited area indicated on the chart by pecked lines between Diga di San Vito and Diga di Tarantola.

Obstructions exist within two areas indicated by pecked lines on the chart ; one area extends about 2 cables northward of the northern end of Diga di San Vito and the other area extends about $1\frac{3}{4}$ cables eastward of Diga di Tarantola.

Porto Mercantile.—Lights.—Depths.—Porto Mercantile is a small commercial harbour protected by two moles ; the western mole extends about 2 cables south-south-eastward and the eastern mole extends about one cable south-westward with a short arm projecting

Chart 1643.

about 100 feet (30^m5) north-westward from its head. The entrance between the heads of these moles is about one cable wide.

About half a cable southward of the middle of the entrance is a 5 deep depression of the sea bed, with a maximum depth of over 28 fathoms (51^m2), in which is a submerged fresh-water spring. In calm weather, small whirlpools form over this area.

A light is exhibited, at an elevation of 23 feet (7^m0), from an iron support, 15 feet (4^m6) in height, situated on the head of the western 10 mole.

A light is exhibited, at an elevation of 23 feet (7^m0), from an iron support, 20 feet (6^m1) in height, situated on the head of the arm extending north-westward from the end of the eastern mole.

The inner sides of both moles, and the north-western side of the 15 harbour for about 500 feet (152^m4) from the root of the western mole, are faced with quays.

There are depths of over 26 feet (7^m9) in the entrance and in the middle of Porto Mercantile, but there is a 21-foot (8^m4) patch close south-eastward of the head of the western mole.

20 There are depths of from 19 to 23 feet (5^m8 to 7^m0) alongside the quay at the western mole and of 16 to 21 feet (4^m9 to 6^m4) alongside the quay extending north-eastward from its root; there are depths of from 22 to 27 feet (6^m7 to 8^m2) alongside the outer part of the quay at the eastern mole, but the depths decrease to about 10 feet (3^m0) 25 alongside the inner part of this quay.

There is a warping buoy near the middle of Porto Mercantile (*Lat.* 40° 29' N., *Long.* 17° 14' E.).

South-westerly winds, though of rare occurrence and of short duration, cause a lop which interferes with working cargo. South-easterly 30 winds also raise a sea, and on some occasions these winds have caused vessels to part their moorings.

Directions.—In order to avoid the prohibited area southward of Isolotto San Pietro, vessels approaching from southward should keep Torre Montello bearing 009° and in line with Isolotto San Paolo light- 35 structure until Capo San Vito light-structure bears about 125°, when course may be shaped north-eastward for the middle of the entrance to Mar Grande, between Isolotto San Paolo light-structure and the light-structure on the head of Diga di San Vito.

Approaching from south-eastward, the coast abreast Leporano 40 (page 509), has no off-lying dangers and may be closely approached. When Capo San Vito light-structure is sighted, course should be shaped so as to pass at a distance of not less than one mile from the cape. When Isolotto San Paolo light-structure is in line with Torre Montello, bearing 009°, it should be steered for on that bearing, and 45 the directions given above should be followed.

Winds.—North-easterly winds are indicated by a belt of clouds which forms on the hills northward of Mar Piccolo and remains while the winds last, generally for some days, the coast being clear. South-easterly winds are indicated by a rise in the water level of Mar 50 Piccolo.

Canals.—**Signal station.**—Mar Grande communicates with Mar Piccolo by means of two canals. The north-western canal is natural and is situated at the north-eastern corner of Porto Mercantile; it is crossed by Ponte Porta Napoli, which has three arches which provide

Chart 1643.

passages for boats. Passagio Piccolo, the south-eastern canal, is artificial ; it is about 2 cables long, 80 yards (73^m1) wide between the quays which line its banks, and 63 yards (57^m6) between the piers of the swing bridge which crosses it, and it has depths of 39 feet (11^m8) in it. 5

A look-out and signal station with a flagstaff, at which are displayed current signals, and signals relating to the passage of vessels using the canal, is situated on Castel Sant' Angelo at the south-western entrance point of Passagio Piccolo. 10

Light-signals.—Light-buoy.—Leading marks.—At night, the following lights are exhibited on the banks of Passagio Piccolo.

When the bridge is closed.—A small *red* light is exhibited on each of the four entrance points of the canal, and a *green* light is exhibited on either side of each of the two pylons supporting the bridge. These 15 eight lights are screened in such a manner that vessels approaching from either Mar Grande or Mar Piccolo will see each side of the canal defined by one *green* light when at some distance from the entrance, and by one *red* light when close to it.

When the bridge is open.—An intensive *red* light is exhibited on each 20 of the four entrance points of the canal and a *blue* light is exhibited on each of the two pylons supporting the bridge. Vessels approaching the canal from either Mar Grande or Mar Piccolo, and on the alignment of the leading lights, will see each side of the canal defined by two *red* lights, one at either end of the canal, with a *blue* light about 25 midway between them.

A light-buoy, exhibiting two *green fixed* lights, is moored about three-quarters of a cable north-north-eastward of the north-eastern entrance point of Passagio Piccolo.

The light-beacon on the head of Diga di Tarantola in line with the 30 light-beacon about 4 cables eastward of the root of Diga di San Vito breakwater, bearing 193°, leads through the canal. The light-beacon (page 506) about a mile north-north-eastward of the flagstaff on Castel Sant' Angelo (*Lat.* 40° 28' N., *Long.* 17° 14' E.) in line with the light-beacon (page 506) on the north-western shore of Mar 35 Piccolo, about half a mile farther north-north-eastward, bearing 013°, also leads through the canal. Lights are only exhibited from the rear light-beacons when vessels are passing through the canal at night.

Currents.—The currents in the canal are irregular both in strength 40 and direction. Transverse currents at the entrances are frequently encountered, and must be taken into account by large vessels. The laws governing the variations of these currents are not known, but they undoubtedly depend on the strength and duration of the winds and the movement of the water in the adjacent areas. 45

Regulations.—Signals.—This canal is regulated exclusively by the Naval authorities ; no traffic is allowed at its quays, and it is used exclusively by Italian men-of-war, or merchant vessels carrying Government stores ; but in certain circumstances other vessels may obtain permission from the Naval Commander-in-Chief to pass 50 through.

In every case a vessel must be well under control, and a speed of from 6 to 8 knots is considered the most convenient for large vessels. Speed is limited to 6 knots, but large vessels of length exceeding about

Charts 1641, 198, 1440, 2158a, 2158b, 449.

Chart 1643.

500 feet (152^m4), but of less than 12,000 metric tons displacement, are allowed to pass through at a speed not exceeding 10 knots. In such a case, however, the speed of revolution of the propellers must be
 5 reduced while actually in the canal.

Castel Sant' Angelo will display, by day, flag F of the International Code of Signals while the north-going stream is running, and flag C while the south-going is running.

In July, 1951, the regular times for opening the bridge were fixed
 10 at from 0550 to 0620 and from 1500 to 1530, but in special circumstances it may be opened from 0000 to 0100, from 0830 to 0900, from 1810 to 1830, and from 2100 to 2200.

In ordinary circumstances as much notice as possible should be given when requesting permission to pass through. In special cir-
 15 cumstances at least 6 hours' notice should be given on working days, and permission requested the day before any holiday.

Vessels having obtained permission to pass through must display the signal JFR of the International Code of Signals when ready to proceed; vessels entering Mar Grande from seaward may display
 20 this signal when abreast Capo San Vito signal station. It must be taken into consideration that 15 minutes are required for preparation, 5 minutes for opening the bridge, and additional time for passing through the canal, and closing the bridge again; a vessel must, therefore, display the signal at least half an hour before the time at which
 25 the bridge will be closed according to the time-table.

The signal requesting the opening of the bridge is received by Castel Sant' Angelo (*Lat. 40° 28' N., Long. 17° 14' E.*) in the case of vessels proceeding into Mar Piccolo, and by the flagship for vessels proceeding out of Mar Piccolo, but in the latter case the signal is repeated to
 30 Castel Sant' Angelo, and vessels leaving Mar Piccolo should wait near the front leading light-beacon, so as to be able to see the signals made from Castel Sant' Angelo.

Provided the signal JFR has been displayed within the specified time for opening the bridge, or 20 minutes beforehand, and at not less
 35 than 30 minutes before the stated time for closing it, Castel Sant' Angelo will repeat the signal JFR. The vessel, Castel Sant' Angelo, and the flagship will in succession, in that order, haul down the signal JFR; whereupon Castel Sant' Angelo will display the following signals:—

| | <i>Signal.</i> | <i>Signification.</i> |
|----|--|--|
| 40 | A ball | The bridge is being opened. |
| | A cone above a numerical signal | Vessels leaving Mar Piccolo to place 45 themselves on the alignment for the canal about 1½ cables from its northern entrance. The numer- ical signal indicates the number of vessels leaving. |
| | A cylinder | Vessels entering Mar Piccolo to place 50 themselves on the alignment for the canal 1½ cables from its southern entrance. |
| | The ball hauled down | The bridge is open. |

Charts 1641, 198, 1440, 2158a, 2158b, 449.

Chart 1643.

*Signal.**Signification.*

Flag H of the International
Code of Signals . . .

Vessels may proceed through the
canal. If a cone is displayed in
addition this signal refers to
vessels leaving Mar Piccolo; if a
cylinder is displayed in addition
this signal refers to vessels entering
Mar Piccolo. 5 10

If for any reason the bridge cannot be opened, Castel Sant' Angelo
will notify vessels by re-displaying the ball, and, if the delay should be
but momentary, will indicate by means of the International Code of
Signals the probable number of minutes of its duration, at the same
time hauling down the ball; these signals will be repeated by the
flagship. 15

Should the permission of the Naval authorities not have been
received for a vessel's passage; should the signal JFR be displayed
by the vessel less than 30 minutes before the time of closing the bridge;
should any accident have rendered it impossible to open the bridge;
or should the vessel's movements suggest that the bridge will not be
able to close by the appointed time, Castel Sant' Angelo will reply to
the signal JFR displayed by the vessel, by displaying the signal
JFR with the flag N, of the International Code of Signals, indicating
a negative answer to the request for passage. In such cases Castel
Sant' Angelo (*Lat. 40° 28' N., Long. 17° 14' E.*) will inform the vessel
by the International Code of Signals, or other suitable means, either
the time that the bridge will next be opened, or give instructions
regarding the vessel. 20 25 30

At night vessels may make the signal JFR by flashing lamp, either
directly to Castel Sant' Angelo, through Capo San Vito signal station,
or through the flagship; to the last-named the request may also be
made by megaphone. The following signals will then be made from
Castel Sant' Angelo, subject to the same conditions as by day. 35

*Signal.**Signification.*

| | | |
|---|--|----|
| A white rocket . . . | Bridge beginning to open. | 35 |
| A green signal light and a green flare . . . | Channel clear for vessels leaving Mar Piccolo. | 40 |
| A red signal light and 2 green flares . . . | Channel clear for vessels entering Mar Piccolo. | |
| White signal light . . . | Bridge beginning to close. Traffic stopped. | |

The number of vessels leaving will be communicated to the first
vessel entering by flashing lamp. 45

A refusal to open the bridge for any reason is indicated by the
firing of a red Very's light from Castel Sant' Angelo.

As a rule vessels will be allowed to leave Mar Piccolo before vessels
waiting to enter are permitted to do so. 50

Mar Piccolo.—Dangers.—Buoyage.—Mar Piccolo is divided into
two basins by a promontory which projects about $1\frac{1}{2}$ miles southward

Charts 1641, 198, 1440, 2158a, 2158b, 449.

Chart 1643.

- from its northern side and terminates in Punta Penna, a low and narrow point about $1\frac{1}{2}$ miles eastward of the northern entrance to Passagio Piccolo. Between this point and the southern shore is a passage
 5 about $2\frac{1}{2}$ cables wide, the navigable width of which is reduced to about one cable by banks on each side. A pile beacon, situated about a quarter of a cable southward of Punta Penna (*Lat.* $40^{\circ} 29' N.$, *Long.* $17^{\circ} 16' E.$), marks the extremity of the bank fringing that point, but the southern side of the passage is fronted by a bank which, with depths
 10 of 2 fathoms (3^m7) and less over it, extends as much as $1\frac{1}{2}$ cables offshore; a rock, awash, lies on this bank near its northern edge, about 2 cables west-south-westward of the pile beacon. A black can buoy, surmounted by a cone, is moored about half a cable north-westward of the rock, awash.
- 15 A light-buoy exhibiting a *red fixed* light is moored about half a cable south-south-westward of Punta Penna and marks the northern side of the passage, and a light-buoy exhibiting a *green fixed* light is moored about one cable farther southward and marks the southern side of the passage.
- 20 Shoal banks of varying width fringe the shores of both basins of Mar Piccolo and there are numerous mollusc culture beds. The limits of these beds are not marked, but in the western basin they can easily be seen as the stakes are visible. In the eastern basin the chart should be consulted as the stakes are mostly submerged and constitute a
 25 danger to small craft.

There are numerous buoys and mooring buoys in both basins, the positions of which may best be seen on the chart.

- Western basin of Mar Piccolo.—Leading light-beacons.—Piers.—Lights.**—Outside the banks which fringe the shores, there
 30 are depths of from 6 to 7 fathoms (11^m0 to 12^m8) in the western basin of Mar Piccolo and its southern part is reserved for berthing Italian men-of-war. The area westward of the prolongation of the axis of Passagio Piccolo is reserved for merchant vessels, which should anchor so as not to interfere with the movements of vessels passing through
 35 the canal.

- Leading light-beacons have been established for Passagio Piccolo. The rear light is occasionally exhibited, at an elevation of 71 feet (21^m6), from a white square masonry pillar with black vertical stripes and a black top, 31 feet (9^m4) in height, situated on the north-western
 40 shore of the basin about $1\frac{1}{2}$ miles north-north-eastward of Castel Sant Angelo; the front light is exhibited, at an elevation of 34 feet (10^m4), from an iron pyramidal framework beacon with white horizontal bands, on piles, 34 feet (10^m4) in height, situated about 5 cables south-south-westward of the rear beacon. These light-beacons in line,
 45 bearing 013° , lead through the centre of Passagio Piccolo.

- The southern side of the western basin is occupied by the Naval dockyard and is partly quayed and partly fitted with wooden piers lying parallel with, and connected to, the shore; from these piers, chains extend to off-moorings.

- 50 A light is exhibited from the head of each of Molo di Ponente and Molo Nord, situated, respectively, $4\frac{1}{2}$ and $8\frac{1}{2}$ cables eastward of Passagio Piccolo.

A T-shaped concrete pier extends about one cable westward from the eastern shore of the western basin, about $1\frac{1}{4}$ cables northward of

Charts 1641, 198, 1440, 2158a, 2158b, 449.

Chart 1643.

Punta Penna ; there are depths of 5 fathoms (9^m1) alongside its head, but it is only strong enough for berthing lighters and small craft.

A jetty extends southward from the Tozzi (Tosi) shipyard, situated about 1½ miles north-north-westward of Punta Penna. This jetty is approached through a narrow dredged channel and there is a least depth of 27 feet (8^m2) alongside its eastern side for a distance of 480 feet (146^m3) from its outer end. The western side of the jetty is obstructed. 5

Pontile del Genio Marina (*Lat. 40° 29' N., Long. 17° 14' E.*) extends about 1½ cables eastward from the western side of the western basin, about 7 cables north-north-westward of the northern entrance to Passagio Piccolo ; there are depths of 30 feet (9^m1) alongside its head and small craft can berth alongside it. 10

Compass adjustment.—In the northern part of the western basin are five buoys to assist vessels swinging for the adjustment of compasses. The following true bearings are from the central of these buoys, which lies about 6½ cables east-south-eastward of the light-beacon on the north-western shore of the basin. 15

| | | |
|---|----------|----|
| The tower of Castello Grottaglie (chart 1641) . | 073° 01' | 20 |
| The square column of Castello Roccaforzata (chart 1641) . | 118° 31' | |
| The belfry of San Cataldo cathedral . | 233° 15' | |
| Torre Montello . | 270° 23' | |
| Mottola belfry (chart 1641) . | 310° 47' | 25 |

Eastern basin of Mar Piccolo.—Torpedo range.—Prohibited anchorage.—Buoyage.—The banks which fringe the shores of the eastern basin, with depths of 3 fathoms (5^m5) and less over them, extend as much as 6 cables offshore in places ; outside these banks, there are depths of from 4 to 5 fathoms (7^m3 to 9^m1) in the basin. 30

A concrete pier, on which is a torpedo testing station, extends about 1½ cables east-north-eastward from the south-western shore of the basin about 1½ cables westward of Punta Pizzone, a point situated about 3½ cables south-south-eastward of Punta Penna. Three target rafts between mooring buoys are moored on the prolongation of the line of this pier, at distances apart of about 5½ cables. Anchorage is prohibited within a distance of about 1½ cables on either side of the line of targets. 35

A searchlight float and a green conical buoy are moored about 1½ and 1¾ cables respectively, south-eastward of the line of targets, between the second and third target rafts. 40

A light-float, exhibiting two *red fixed* lights, disposed vertically, and a light-buoy, exhibiting a *blue fixed* light, are moored about 1¾ cables, north-westward and north-north-westward, respectively, of the westernmost target raft. 45

Piers.—Lights.—A light is exhibited from a small jetty at Cacace, situated on the southern shore of the basin, about 5 cables east-south-eastward of the head of the Torpedo Range pier.

A concrete pier on square pillars, with depths of about 3½ fathoms (6^m4) at its outer end, projects about 3 cables north-north-westward from the southern shore of the basin, about 1¾ miles eastward of the head of the Torpedo Range pier ; there is a short pier about half a mile south-westward of its root. 50

Porticciolo di Buffoluto, a camber reserved for Italian Government
Charts 198, 1440, 2158a, 2158b, 449.

Chart 1643.

craft, is situated on the north-western shore of the basin, about one mile north-north-eastward of Punta Penna. The shore in this vicinity is quayed for a considerable distance and there are several piers close
5 to the camber.

A light is exhibited from the western of two piers, situated about 8 cables north-north-eastward of Punta Penna.

Town.—Port facilities.—Radio station.—The town of Taranto, which in 1941 had a population of about 124,000, is divided into three
10 distinct parts, Borgo della Stazione, Taranto Vecchio and Taranto Nuovo.

Borgo della Stazione, of modern construction, stands northward of Porto Mercantile.

Taranto Vecchia stands on an island and is connected with the mainland on either side by two bridges, of which Ponte Porta Napoli
15 is of masonry and connects it with Borgo della Stazione; the other bridge, which connects it with Taranto Nuovo, is an iron swing bridge which crosses Passagio Piccolo. Prominent above the closely packed houses of the ancient Taranto Vecchia, is the belfry of the old cathedral, and Castel Sant' Angelo at the south-eastern end of Taranto
20 Vecchia, is also prominent.

Taranto Nuovo (*Lat.* 40° 28' N., *Long.* 17° 14' E.), situated eastward of Passagio Piccolo, contains large modern buildings and has wide and regular streets.

The principal industries are shipbuilding and engineering, the manufacture of cement, linen and cotton goods, and fishing. The products
25 of these industries are the chief exports.

There is a large civil, as well as a Naval, hospital.

Large stocks of coal and fuel oil are normally maintained for Italian Government vessels, but only small stocks for commercial vessels.

30 Fresh provisions are plentiful.

Fresh water is laid on to the quays in Porto Mercantile and can also normally be supplied by Italian Government tank vessels.

Large repairs to hulls and machinery can be undertaken both in private shipyards and in the Naval dockyard. There are numerous
35 cranes on the quays in Porto Mercantile and also at the Naval dockyard; the largest crane is of 100 tons lifting capacity and is in the Naval dockyard. There are several tugs and lighters available.

There are two graving docks and a floating dock in the Naval dockyard; for the dimensions of the larger graving dock, *see* Appendix I,
40 page 519. There are several patent slipways, of which the largest can take vessels up to about 400 feet (121^m9) in length.

There is regular sea communication with other Italian and Mediterranean ports.

There is a radio station at Taranto, *see* page 16.

Deratisation.—Deratisation can be carried out, *see* page 18.

45 **Climatic table.**—*See* page 44.

Chart 1641.

NORTH-EASTERN SIDE OF GOLFO DI TARANTO.—Capo San Vito to Torre dell' Ovo.—Coast.—Between Capo San Vito and
50 Torre dell' Ovo, about 15 miles east-south-eastward, the coast is generally low and rocky and has many small indentations; it is dominated by the hills of Roccaforzata, which attain an elevation of 476 feet (145^m1) about 9 miles east-north-eastward of Capo San Vito and 5 miles inland, and are surmounted by a conspicuous castle.

Charts 1641, 198, 1440, 2158a, 2158b, 449.

Chart 1641.

Torre San Vito, which should not be confused with the tower of the same name on Capo San Vito, stands at an elevation of 46 feet (14^m0) on the coast about 1½ miles eastward of Capo San Vito; it is light-coloured and square with a horizontal row of windows and a small superstructure. Casa Basile, a prominent one-storeyed building surmounted by a small tower, stands close within the coast about 2 miles east-south-eastward of Torre San Vito. 5

Torre Saturo, situated on a small point separating two coves, about 4 miles east-south-eastward of Torre San Vito, is a square building, 10 surmounted by a small white structure. Local fishing boats obtain shelter from north-easterly winds in either of these coves, the western of which has a sandy beach at its head.

The village of Leporano stands at an elevation of 154 feet (46^m9), about 1½ miles north-eastward of Torre Saturo; it may be identified 15 by its castle, which has a square tower surmounted by a triangulation pillar.

Porto Logovivo, situated about 1½ miles east-south-eastward of Torre Saturo, is a cove which affords shelter from winds between north-west and east, to small craft with local knowledge. 20

Torre Castelluccia stands at an elevation of 72 feet (21^m9) close to the coast about 4 miles east-south-eastward of Torre Saturo; it is of a light-brick colour, surmounted by a square column and is prominent from seaward.

Torre Sassoli (*Lat.* 40° 20' N., *Long.* 17° 24' E.) is situated on a low 25 rocky point, about 1½ miles south-eastward of Torre Castelluccia, and, although in ruins, is conspicuous from seaward. About 4 miles north-north-eastward of Torre Sassoli, the white houses of the town of Lizzano may be seen at an elevation of 131 feet (39^m9).

Torre dell' Ovo.—Light.—Anchorage.—Dangers.—Torre dell' 30 Ovo stands on the coast about 5 miles east-south-eastward of Torre Sassoli; it is surmounted by a white hut with a flagstaff. A low and rocky natural breakwater extends a short distance south-westward from the coast close north-westward of the tower, but it is only visible from a distance of 2 or 3 cables offshore. About 2 miles north-north- 35 westward of Torre dell' Ovo, the village of Monacizzo stands at an elevation of 105 feet (32^m0).

A light is exhibited, at an elevation of 105 feet (32^m0), from the white masonry hut on Torre dell' Ovo, the whole edifice being 56 feet 40 (17^m1) in height.

Small vessels with local knowledge can obtain shelter from offshore winds westward of Torre dell' Ovo. The bottom is rocky and has deep crevices and the use of an anchor buoy is advisable.

A rocky spit, with depths of 13 feet (4^m0) over it, extends about 6 cables southward from the coast about 4 cables south-eastward of 45 Torre dell' Ovo, and a rocky bank, with depths of 23 feet (7^m0) over it, extends about 1½ miles south-eastward from the coast about one mile east-south-eastward of the tower. Secca di Torre dell' Ovo, over which there is a least depth of 19 feet (5^m8), lies about 1½ miles south-eastward of Torre dell' Ovo. 50

Currents.—The currents set along the coast from east to west; they are usually weak, but attain some strength with strong easterly winds.

Torre dell' Ovo to Porto Cesareo.—Coast.—Anchorage.—Between Torre dell' Ovo and Torre Lapillo, about 15½ miles eastward, the coast is generally low and rocky with some sandy beaches. Several

Chart 1641.

towers, most of which are prominent from seaward, stand on this stretch of coast.

5 Torre dei Molini, tall, dark and in the shape of a truncated cone, stands on the coast about $2\frac{1}{4}$ miles eastward of Torre dell' Ovo. It is inconspicuous, being surrounded by a group of low buildings, but a short distance farther northward is a large light-coloured building which is visible from 8 to 10 miles offshore and serves to identify the locality.

10 In fine weather vessels with local knowledge can obtain anchorage off Torre dei Molini, sheltered from winds from between north-west and north-east, at a convenient distance offshore. There are depths of about 5 fathoms (9^m1), sand, about half a mile offshore; this anchorage is of little importance.

15 Torre Boraco, situated on the coast about $3\frac{1}{2}$ miles eastward of Torre dei Molini, is massive, light-coloured and square. Torre del Vento, about 2 miles north-north-eastward of Torre Boraco, rises from behind a group of low white buildings with three arches and is moderately prominent from seaward; the tower, which is earth-coloured, is
20 surrounded by a wall.

Torre San Pietro, situated close within the coast about $1\frac{1}{2}$ miles eastward of Torre Boraco, is connected to a white building with a pyramidal roof and resembles a church. On some bearings it is hidden from seaward by high dunes on the beach, and by intervening vegeta-
25 tion. When seen from westward against the high vegetation, it appears more like a group of houses than a tower. A bare and narrow conical hillock is situated about 2 miles northward of Torre San Pietro and is prominent.

Torre Colimena, surmounted by a white hut, stands on a short point
30 about $3\frac{1}{4}$ miles eastward of Torre San Pietro and is the tallest of the towers on this stretch of coast.

Charts 1635 and 1641.

Torre Lapillo (*Lat.* $40^{\circ} 17' N.$, *Long.* $17^{\circ} 51' E.$), surmounted by a light-coloured square hut, stands on a point about $4\frac{1}{2}$ miles eastward
35 of Torre Colimena. Between Torre Lapillo and Torre Chianca, about $1\frac{1}{2}$ miles east-south-eastward, the coast curves and forms Porto Lapillo, a bight which is open south-westward.

Small vessels with local knowledge may obtain anchorage in depths of from 10 to 13 feet (3^m0 to 4^m0), in Porto Lapillo, but the holding
40 ground is poor and Porto Cesàreo, *see* below, is to be preferred.

Between Torre Chianca and Torre Cesàreo, a massive and prominent square tower standing near the extremity of a short point, about $1\frac{1}{4}$ miles south-eastward, the coast is fronted by numerous rocks and islets which in places extend as much as 4 cables offshore.

45 **Fishing nets.**—Nets are laid in an area between the coast and a line joining Torre Colimena and a position $5\frac{3}{4}$ miles 240° from Isola Sant' Andrea light-structure (page 513).

Porto Cesàreo.—**Dangers.**—**Leading lights.**—Porto Cesàreo is a small harbour lying on the south-eastern side of the point on which
50 Torre Cesàreo stands at the southern end of a village of the same name. Penisola della Strega, a low and narrow tongue of land, extends about $1\frac{1}{4}$ miles north-westward from Torre Squillace, a square tower on the coast about $1\frac{1}{2}$ miles south-eastward of Torre Cesàreo, and protects the harbour from south-westward. La Salmenta, the lowest

Charts 198, 1440, 2158a, 2158b, 449.

Charts 1635 and 1641.

of three farmhouses, consisting of a large, conspicuous, greyish building, with a small square pillar at its north-western corner, stands at an elevation of 92 feet (28^m0), about 1½ miles north-eastward of Torre Cesàreo, and makes a good landmark. 5

The harbour is entered between Scoglio di Testa, a low rock situated about a quarter of a mile south-south-westward of Torre Cesàreo, and Scoglio del Capparone, a similar rock situated close off the north-western extremity of Penisola della Strega, about 2 cables east-south-eastward. Two other rocks, Scoglio di Mezzo and Scoglio della Casa, 10 are situated between Scoglio di Testa and Torre Cesàreo and these three rocks lie on a rocky bank which, with depths of less than 10 feet (3^m0) over it, extends about 3½ cables south-south-westward of that tower. A 3-foot (0^m9) rocky patch lies about three-quarters of a cable south-eastward of the south-eastern extremity of Scoglio di Testa. 15

Leading lights have been established for the entrance. The front light is exhibited, at an elevation of 11 feet (3^m4), from a masonry hut painted in black and white chequers and surmounted by a small square pillar, 13 feet (4^m0) in height, situated about 3½ cables east-north-eastward of Torre Cesàreo; the rear light is exhibited, at an elevation 20 of 43 feet (13^m1), from a similar hut about 4½ cables north-eastward of the front light. These lights in line, bearing 034°, lead through the entrance to Porto Cesàreo in a least depth of 13 feet (4^m0).

The harbour affords secure shelter to small vessels of a draught not exceeding 10 feet (3^m0), but with south-westerly winds, locally known 25 as "Vento di Calabria," the sea breaks in the entrance and the effect is felt in the harbour. There are depths of from 6 to 15 feet (1^m8 to 4^m6) over a large part of the harbour, but the south-eastern part is completely silted up. There is a rough landing place, suitable only for small boats, close eastward of Torre Cesàreo. 30

Obstruction.—In 1947, an obstruction, the existence of which is doubtful and the position approximate, was reported to lie in the approaches to Porto Cesàreo about 5½ miles south-westward of the front leading light.

Currents.—Along this part of the coast currents are usually non-existent, but with strong and enduring north-westerly winds a noticeable south-east-going current is caused. 35

Torre Squillace to Porto di Gallipoli.—Coast.—Fishing nets.
—**Anchorage.**—Between Torre Squillace and the promontory on which stands part of the town of Gallipoli, about 11½ miles south-south-eastward, the coast is alternately rocky and sandy and has many small coves, none of which are of importance. This stretch of coast is backed by moderately high land, which is wooded in places. Numerous towers stand on the coast, most of which serve as good landmarks. 40

The square Torre Squillace (*Lat.* 40° 14' N., *Long.* 17° 55' E.), when seen from north-westward, has a light-coloured upper part and a dark lower part, but when seen from southward is of a uniform light colour. Torre Sant' Isidoro, situated on the coast about 1½ miles south-south-eastward of Torre Squillace, is also square but presents a dark upper 50 part and light-coloured lower part when viewed from any direction.

Tunny fishing nets extend about one mile westward from the coast close southward of Torre Sant' Isidoro, *see* page 11.

Torre dell' Inserraglio, situated on the coast about 2 miles southward

Charts 1635 and 1641.

of Torre Sant' Isidoro, is visible from a distance of 6 or 7 miles, has a whitish appearance and appears to rise from the sea.

Torre dell' Alto, well-preserved, dark and square and surmounted by a white square hut, stands on the coast about $3\frac{1}{2}$ miles south-eastward of Torre dell' Inserraglio. It is overlooked by a dense wood about a quarter of a mile north-eastward, and at the southern edge of this wood is Madonna dell' Alto, a group of houses amongst which a large brick-coloured farmhouse and a church with a small belfry are prominent.

Torre Santa Caterina, dark in colour, stands amongst the houses of a village of the same name half-way up a bare slope at the head of Insenatura di Santa Caterina, an inlet about half a mile south-eastward of Torre dell' Alto. Small local craft can obtain shelter from north-westerly winds in this inlet, in depths of 20 feet (6^m1), sand, but it is seldom frequented. A rocky shoal, with depths of one fathom (1^m8) over it, lies about one cable from the head of the inlet.

Santa Maria del Bagno, locally known as Il Vagno, is an inlet with a large village at its head, situated close south-eastward of Insenatura di Santa Caterina. Small vessels with local knowledge may obtain anchorage in depths of from 26 to 30 feet (7^m9 to 9^m1), sand, in the middle of the inlet close within the entrance.

Torre Fiume, locally known as Torre delle Quattro Colonne from its appearance, is situated on the coast, about $1\frac{1}{2}$ miles south-south-eastward of Torre Santa Caterina; it consists of a low, four-sided building surmounted by four tall circular columns. Torre d'Alto Lido stands at an elevation of 230 feet (70^m1) on a steep rocky slope, about half a mile south-eastward of Torre Fiume; it is circular and easily identified from seaward.

Torre Sabea, standing on the coast about 2 miles southward of Torre d'Alto Lido and about the same distance north-eastward of Porto di Gallipoli, is a three-storeyed, crenellated building in the shape of a truncated pyramid.

Chart 204.

Gallipoli.—General remarks.—The town of Gallipoli, which in 1941 had a population of about 12,000, is built partly on a promontory about $1\frac{3}{4}$ miles south-westward of Torre Sabea, and partly on a rocky island close off the promontory, with which it is connected by a masonry bridge. The old town lies on the island with an ancient castle at its eastern end, while Il Borgo, the modern part of the town, extends for about half a mile along the promontory. See view facing this page. The main harbour lies on the northern side of the town.

The coast in the vicinity is generally low but the village of Madonna dell' Alto, see above, may be seen from a considerable distance, and Grosso di Racale (chart 1635), an olive-covered ridge, 330 feet (100^m6) high, extends for some miles south-eastward from a position about 7 miles south-eastward of the castle in the town and is also prominent. About $8\frac{1}{2}$ cables east-north-eastward of the castle and close to the coast is a red-brick chimney, and close eastward of this chimney is a white building with a white chimney; both of these chimneys may be seen from 8 to 10 miles seaward; another chimney stands on the coast about 4 cables north-eastward of the red-brick chimney.

The houses of Il Borgo (*Lat.* $40^\circ 03' N.$, *Long.* $17^\circ 59' E.$) are dominated by two towers: one rises from a red and white chequered roof

Charts 1635, 1641, 198, 1440, 2158a, 2158b, 449.



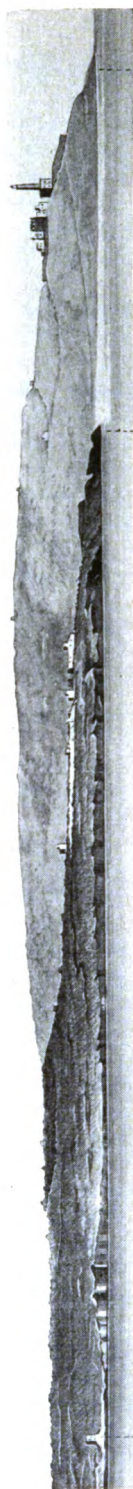
*Isola Sant' Andrea light-tower,
bearing 035°.*

*Torre Sabea.
Scoglio Campo.*
Gallipoli from south-westward.

(Original dated 1877.)

Gallipoli.

Light-tower, bearing 065°, distant 3 miles.



Torre San Gregorio.

Punta Risola.

Capo S. Maria di Leuca.

Capo Santa Maria di Leuca from westward.

(Original dated 1877.)

Chart 204.

about $4\frac{1}{2}$ cables eastward of the castle, and the other, small and square, stands about one cable farther southward.

Fishing nets.—Tunny fishing nets extend about one mile north-north-westward from the coast in front of the red-brick chimney, about $8\frac{1}{2}$ cables east-north-eastward of the castle. These nets are laid out in February and taken up in November. 5

Nets are also laid in an area between the coast and a line joining Torre Colimena (page 510) and a position $5\frac{1}{2}$ miles 240° from Isola Sant' Andrea light-structure, *see* below. 10

Pilotage.—Pilotage is compulsory for entering the harbour. Local pilots will board vessels by day and at night at the entrance to the harbour, even in bad weather.

Off-lying island and dangers.—**Light.**—**Light-buoy.**—Isola Sant' Andrea lies with its eastern extremity about 8 cables west-south-westward of the western extremity of the island on which the town of Gallipoli stands; it is low, and with strong south-easterly winds the sea almost completely inundates it. It is surrounded by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends in places about three-quarters of a cable offshore. 15
Rafo di Sant' Andrea, a shoal with a least depth of $1\frac{1}{2}$ fathoms (2^m3) over it, lies about half a cable off the southern end of the south-eastern side of the island. 20

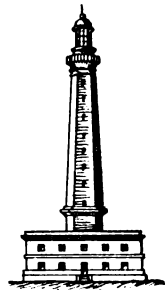
A light is exhibited, at an elevation of 148 feet (45^m1), from a white octagonal tower on a two-storeyed dwelling, 141 feet (43^m0) in height, situated on the south-western extremity of Isola Sant' Andrea. Distress signals are displayed from the light-structure, *see* page 11.

Secca del Rafo, a shoal about half a cable long in a north-westerly and south-easterly direction, over which there is a least depth of $1\frac{1}{2}$ fathoms (2^m3), lies with its northern edge about 5 cables northward of the castle at Gallipoli; a $5\frac{1}{2}$ -fathom (9^m6) patch lies about $1\frac{1}{2}$ cables south-south-westward of the southern extremity of Secca del Rafo. 35

A light-buoy, exhibiting a *red flashing* light, showing a *short flash every five seconds*, is moored on the northern edge of Secca del Rafo.

The island on which the town is built is surrounded by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as $2\frac{1}{2}$ cables offshore south-westward of the town; on this bank are numerous rocks, awash and above-water, of which the two largest, Scoglio Campo, which is 13 feet (4^m0) high, and Scoglio Piccioni, lie close to the western edge of the bank. The bank extends about half a cable southward of Scoglio Piccioni. There are depths of 8 fathoms (14^m6) in the fairway of the passage between Scoglio Campo (*Lat.* $40^\circ 03' N.$, *Long.* $17^\circ 58' E.$) and Isola Sant' Andrea. 45

Harbour.—**Light.**—The harbour is on the northern side of the town and is protected by Molo Foraneo, which extends about $1\frac{1}{2}$ cables east-north-eastward from abreast the northern end of the town and is partially quayed. Molo di Tramontana is an extension east-north-eastward of Molo Foraneo and is about one cable in length. A bridge about 230 feet (70^m1) long connects the western end of Molo Foraneo with the coast at the northern end of the town, whence two quays 50



*Isola Sant' Andrea
light-tower.*

Chart 204.

extend south-eastward and east-south-eastward and form the south-western side of the harbour. Banchina del Lido, the first of these quays, extends about 600 feet (182^m8) south-eastward, and from its
 5 south-eastern end, Banchina della Ferrovia, the second quay, extends about 530 feet (161^m3) east-south-eastward as far as the western end of the bridge connecting the island with the mainland.

A light is exhibited, at an elevation of 32 feet (9^m8), from a circular column surmounting a cylindrical metal hut, 23 feet (7^m0) in height,
 10 situated on the head of Molo di Tramontana (*Lat.* 40° 03' N., *Long.* 17° 59' E.).

Quayage.—Depths.—Dangers.—A quay, about 300 feet (91^m4) long, projects about 39 feet (11^m9) from about the middle of the inner side of Molo Foraneo, with depths alongside it of 24 feet (7^m3), but the
 15 remainder of the inner side of this mole and of Molo di Tramontana is fronted by submerged foundations and should not be approached within about a distance of 33 feet (10^m1), by vessels of a draught exceeding 10 feet (3^m0). Molo Foraneo is usually reserved for berthing naval craft.

20 Commercial traffic is generally carried out at Banchina del Lido, which has a least depth alongside of 3 $\frac{3}{4}$ fathoms (6^m9), and, in the case of smaller craft, at Banchina della Ferrovia, as there are depths of not more than 13 feet (4^m0) alongside this quay.

There are depths of from 5 to 6 fathoms (9^m1 to 11^m0) in the outer
 25 part of the harbour, with patches of 4 $\frac{1}{2}$ and 4 $\frac{1}{2}$ fathoms (8^m7 and 8^m2) at about one cable and 6 $\frac{1}{2}$ cables, respectively, south-westward of the head of Molo di Tramontana.

A bank on which the depths are less than 3 fathoms (5^m5) fronts the southern shore of the harbour from abreast the eastern end of
 30 Banchina della Ferrovia and extends as much as three-quarters of a cable offshore; on the inner part of this bank is Scogli della Uccollette, a rocky bank on which are numerous rocks, awash, which extends about half a cable offshore in front of the bridge joining the island with the mainland.

35 Vessels of about 420 feet (128^m0) in length, and draught of 21 feet (6^m4), can enter the harbour. Vessels approaching from southward or westward should pass between Molo Foraneo and the southern end of Secca del Rafo, passing about half a cable southward of the latter. With strong winds from between north-east and north-west, entry to
 40 the harbour is difficult, and in such conditions the head of Molo di Tramontana must be given a wide berth.

Buoy.—A mooring and warping buoy is moored about 1 $\frac{3}{4}$ cables south-westward of the head of Molo di Tramontana.

Boat harbours.—Light.—Seno del Cannetto is a small harbour,
 45 situated southward of the bridge connecting the island with the mainland; it is protected from south-westward by a breakwater which extends about three-quarters of a cable from its western side.

A light is exhibited, at an elevation of 26 feet (7^m9), from a square iron framework structure, 20 feet (6^m1) in height, situated on the head
 50 of the breakwater.

There is a landing place for boats with a least depth alongside of 5 feet (1^m5), on the eastern side of Seno del Cannetto, but care must be taken to avoid several rocks, awash, in the vicinity.

Seno di Ponente, situated on the north-western side of the town,

Charts 1635, 1641, 198, 1440, 2158a, 2158b, 449.

Chart 204.

south-south-westward of the root of Molo Foraneo, is another well-protected boat harbour, with depths of from three-quarters of a fathom to $1\frac{1}{2}$ fathoms (1^m4 to 2^m7) in it.

Anchorage.—Directions.—Vessels of any size may obtain anchorage either northward or southward of the town. The northern anchorage is protected from winds from the southern semi-circle, but is exposed to north-westerly and westerly winds which, if strong, raise a heavy sea. 5

During the months when the tunny fishing nets are not laid in position, vessels should approach the northern anchorage on a bearing of 180° of the Harbour Master's office, a red, square isolated building, situated at the eastern end of the bridge connecting the town with the mainland, and should anchor, in a depth of about 8 fathoms (14^m6), when the light-buoy marking Secca del Rafo bears about 300° . 15 When the tunny fishing nets are in position, vessels should anchor westward of a line joining the head of Molo di Tramontana and the light-buoy marking Secca del Rafo.

The southern anchorage is off Seno del Cannetto and affords shelter from northerly winds. The best berth is in depths of about 9 fathoms (16^m5), sand, with the north-eastern extremity of Scoglio Campo in line with the southern extremity of the bastions of the town, bearing about 301° , distant about $5\frac{1}{2}$ cables from Scoglio Campo (*Lat.* $40^\circ 03' N.$, *Long.* $17^\circ 58' E.$). 20

Currents.—The currents in this locality depend generally on the direction of the wind and vary in rate; they are also felt in the harbour. The strongest current is that caused by south-westerly winds, which sets up silting in the harbour. 25

Port facilities.—Fresh provisions are available in the town and fresh water is laid on to the quays. Small repairs to hull and 30 machinery can be undertaken.

There are two slipways for small craft only, one in Seno del Cannetto and the other at the eastern end of the southern shore of the harbour, about $4\frac{1}{2}$ cables east-north-eastward of the castle.

Banchina del Lido and Banchina della Ferrovia are both served by 35 the railway and there are several mobile cranes on them, the largest of which is of 10 tons lifting capacity.

There is a moderately large civil hospital in Gallipoli.

The chief exports are wine, oil, olive pulp and casks, and the principal imports are manufactured goods, cement, grain and coal. 40

There is regular sea communication with other Italian and Mediterranean ports.

Charts 1635 and 1641.

Gallipoli to Torre San Giovanni.—Coast.—Fishing nets.—

Between the entrance to Seno del Cannetto and Punta del Pizzo, about 45 $3\frac{1}{2}$ miles southward, the coast forms a sandy bay on the northern shore of which, about one mile east-south-eastward of the entrance to Seno del Cannetto, stands Torre San Giovanni, tall, square and surmounted by a small structure. This tower should not be confused with a tower of the same name about 11 miles farther south-south-eastward. 50

Punta del Pizzo is surmounted by a white circular tower with a flat roof on which is a white square tank. The point projects north-westward, forming on its eastern side a small bight in which local

Charts 198, 1440, 2158a, 2158b, 449.

Charts 1635 and 1641.

small craft obtain shelter from south-easterly and east-north-easterly winds.

Tunny fishing nets extend about three-quarters of a mile north-
5 north-westward from the coast close to Punta del Pizzo. These nets are laid in February and are taken up in November.

Chart 1635.

From Punta del Pizzo, the coast, which is low and rocky, trends south-south-eastward for about $3\frac{1}{2}$ miles to Torre Suda ; on the coastal
10 slopes along this stretch are several buildings, which become more numerous as Torre Suda is approached. Torre Suda is white, circular and surmounted by a superstructure. It is surrounded by buildings, among which is one with a small crenellated tower which resembles a castle ; when seen from southward, the tower stands out against
15 the other buildings. A large, prominent building, dark red in colour, with a tower at each end, stands at an elevation of 341 feet (103^m9) on the summit of Monte Specchie, about $1\frac{1}{2}$ miles east-north-eastward of Torre Suda.

From Torre Suda, the coast trends south-eastward for about $5\frac{1}{2}$ miles
20 to Torre San Giovanni and is dotted with numerous buildings. Torre Sin Fono is situated on the coast at about the middle of this stretch, but is not easily distinguished, being low and in the middle of a group of houses. Il Pazzi, an above-water rock, lies about $1\frac{1}{2}$ miles south-eastward of Torre Sin Fono and about one cable offshore.

25 **Torre San Giovanni.—Light.—Fishing nets.**—Torre San Giovanni, standing on a rocky point about 3 miles south-eastward of Torre Sin Fono, is painted in black and white chequers, surmounted by a hut and surrounded by fishermen's cottages. The town of Ugento (*Lat.* 39° 56' N., *Long.* 18° 10' E.), in which is a prominent
30 church, stands at an elevation of about 354 feet (107^m9), about $3\frac{1}{2}$ miles north-eastward of Torre San Giovanni and is visible from seaward.

About $1\frac{1}{2}$ cables south-eastward of Torre San Giovanni, a ridge of rocks runs parallel with the coast about one cable offshore for about
35 $6\frac{1}{2}$ cables ; seen from southward, the ridge shows seven distinct rocks, the largest of which is Scoglio Tondo which has a rounded top. Small fishing craft obtain shelter from onshore winds in the channel between the ridge and the coast, but local knowledge is necessary.

A light is exhibited, at an elevation of 51 feet (15^m5), from a masonry
40 hut surmounting Torre San Giovanni, the whole edifice being 56 feet (17^m1) in height.

Fishing nets may be laid in the vicinity of Torre San Giovanni, within a radius of $3\frac{1}{2}$ miles of the tower.

Secche di Ugento.—Light-buoy.—Between Torre San Giovanni
45 and Torre I Pali, about $5\frac{1}{2}$ miles south-eastward, the coast is fronted by Secche di Ugento, a group of rocks and shoals lying on a bank which, with depths of less than 3 fathoms (5^m5) over it, extends as much as 2 miles offshore south-south-westward of Torre Mozza, a truncated conical tower standing by itself on the coast about 3 miles
50 south eastward of Torre San Giovanni. Among these rocks and shoals are :—Giumenta and Cavallo, two large rocks awash, lying close to the southern extremity of the bank ; Secca del Palombaro, with depths of about 3 feet (0^m9) over it, lying about one mile south-westward of Torre Mozza ; and La Giurlita, an above-water rock,

Charts 198, 1440, 2158a, 2158b, 449.

Chart 1635.

lying close to the western edge of the bank about $1\frac{1}{2}$ miles westward of Torre Mozza.

A conical light-buoy, painted red and exhibiting a *white flashing* light *every six seconds*, is moored close off the southern extremity of Secche di Ugento. 5

By day in thick weather, vessels should keep in depths of not less than 16 fathoms (29^m3) when in the vicinity of Secche di Ugento. At night, Secche di Ugento are covered by the *red* sector of Isola Sant' Andrea light between the bearings of 323° and 334°; by the *red* 10 sector of San Giovanni light between the bearings of 311° and 013°; and by the *red* sector of Santa Maria di Leuca light (page 518) between the bearing of 087° and the coast.

Torre I Pali to Capo Santa Maria di Leuca. — Coast. — Dangers.—Anchorage.—Torre I Pali, similar in shape to Torre 15 Mozza but taller, stands on the south-eastern extremity of a tongue of low land and is partly in ruins. A white house stands close westward of the tower and there are some fishermen's cottages behind it. La Fanciulla, a low, dark and rugged rock, lies close westward of the tongue of low land. 20

Between Torre I Pali and Torre San Gregorio, about 5 miles east-south-eastward, the coast is fronted by a bank which, with depths of less than 3 fathoms (5^m5) over it, extends in places about three-quarters of a mile offshore; on this bank are isolated patches with depths of from 7 to 10 feet (2^m1 to 3^m0) over them. 25

Torre Vado, locally known as Torre Marciano, stands close to the coast near some houses on a slope, about 3 miles eastward of Torre I Pali; it is circular in shape and is well-preserved. Torre San Gregorio, standing on a hill, 108 feet (32^m9) high, about 2 miles south-eastward of Torre Vado, is almost completely in ruins, and being of the same 30 colour as the land around it, is not easily distinguished from seaward; there are some whitish houses eastward of this tower. A rock, nearly awash, lies close off the small promontory on which Torre San Gregorio stands. From this promontory, the coast trends south-eastward with several small indentations for about 2 miles to Punta Ristola (*Lat.* 35 39° 47' N., *Long.* 18° 21' E.).

Small vessels with local knowledge can obtain shelter from northerly winds in depths of about 13 feet (4^m0), about $1\frac{1}{2}$ cables off the head of a small cove about a quarter of a mile south-eastward of Torre San Gregorio. 40

Chart 198, plan of Santa Maria di Leuca anchorage.

From Punta Ristola, the coast trends east-north-eastward for about $8\frac{1}{2}$ cables and thence south-eastward for about $3\frac{1}{2}$ cables to Punta Meliso, the south-western extremity of Capo Santa Maria di Leuca, forming a bight on the north-western shore of which is the village of 45 Leuca. The shores of the bight are fronted by Banco La Scala, which has two projecting ridges with depths of from $5\frac{1}{2}$ to 11 fathoms (10^m1 to 20^m1) over them; one ridge extends about $1\frac{1}{2}$ miles south-south-eastward of Punta Ristola, and the other extends about three-quarters of a mile south-south-westward of Punta Meliso. 50

Capo Santa Maria di Leuca.—Light.—Radiobeacon.—Signal station.—Capo Santa Maria di Leuca is the eastern entrance point of Golfo di Taranto and the western entrance point of the Adriatic; it is about 459 feet (139^m9) high, and from southward appears rocky

Chart 198, plan of Santa Maria di Leuca anchorage.

and precipitous, but presents a more gradual slope from other directions, *see* view facing page 512.

5 A light is exhibited, at an elevation of 335 feet (102^m1), from a white octagonal tower on a white two-storeyed dwelling, 159 feet (48^m5) in height, situated on Capo Santa Maria di Leuca.

10 A radiobeacon transmits from a structure close eastward of the light-structure.

A signal station (chart 1635), consisting of a tower with arched windows, stands about 1½ miles north-westward of the light-structure and is prominent from seaward; near it is a house. Messages from vessels will be transmitted by telegraph.

15 **Currents.**—The inshore currents around Capo Santa Maria di Leuca are variable; in the offing, in normal conditions of weather, the current from the Adriatic usually sets southward.

Strong south-easterly winds are sometimes preceded by a current setting towards Secche di Ugento.

20 **Leuca.—Anchorage.**—The village of Leuca, which in 1941 had a population of about 600, is a popular summer resort and includes numerous fine villas. Prominent landmarks are :—The lighthouse on Capo Santa Maria di Leuca with a chapel close northward of it; Torre dell' Omomorto, a circular building surrounded by rustic houses, standing on a rocky eminence near the beach westward of the village and about three-quarters of a mile westward of the lighthouse; and a long, low building with a flat roof, situated on the eastern shore of the bight, about one cable westward of the lighthouse.

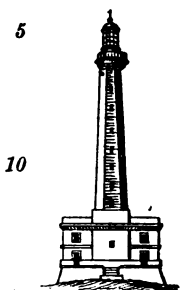
30 A breakwater, northward of which local fishing boats obtain shelter, extends about half a cable westward from Punta Matazeddu (*Lat.* 39° 48' N., *Long.* 18° 22' E.), a point which projects south-westward from the coast about 2¼ cables north-north-westward of Punta Meliso; there is a slipway for boats on the coast at the root of the northern side of the breakwater. The only landing place is on the northern side of the breakwater.

A concrete pier, with depths of 5 feet (1^m5) alongside its head, extends from the coast in front of the village of Leuca.

40 The anchorage of Santa Maria di Leuca lies in the bight between Punta Ristola and Punta Meliso and affords shelter from north-easterly winds, but is dangerous with southerly winds. The best berth is in depths of about 6½ fathoms (11^m9), off the village of Leuca, and about midway between Punta Ristola and Punta Meliso. With a strong Bora (northerly wind) blowing, squalls at the anchorage are very violent.

Small vessels of a draught of less than 13 feet (4^m0) can find shelter from the sea raised by strong north-easterly winds at the above-mentioned anchorage, north-north-westward of Punta Meliso, in depths of from 3¼ to 4½ fathoms (6^m9 to 8^m2), sand.

Charts 1635, 1641, 198, 1440, 2158a, 2158b, 449.



15 *Capo Santa Maria di Leuca light-tower.*

APPENDIX I

LIST OF PORTS AVAILABLE FOR UNDER-WATER REPAIRS, with details of Largest Dry or Floating Dock or Patent Slip at each Port

519

| NAME OF PORT AND TYPE OF DOCK, ETC. | Length from bilge of caisson or mitre post of gates at | | Maxi- mum length of keel blocks | Breadth of entrance at | | MHWS level | Distance {below (+) above (-) Chart datum level of | | | | Springs rise | FLOATING DOCKS, PATENT SLIPS, etc. | | | REMARKS |
|---|--|---------------|--|---------------------------|-------|--------------------|--|-------|------------------------------|------|-----------------|---------------------------------------|------|------|---|
| | Coping head | Floor head | | Coping | Sill | | Blocks, at | | Maximum depth over blocks | | | Lifting power | | | |
| | | | | | | | Entrance | Head | Forward | Aft | | | | | |
| | | | | | | | | | | | | | (1)* | (2)* | |
| | Feet | Feet | Feet | Feet | Feet | Feet | Feet | Feet | Feet | Feet | Feet | Feet | Feet | Tons | |
| MARSEILLE, Dry dock . | 698.7 | — | 670.0 | 82.0 | — | 29.4(1) 28.3(2) | 29.4 | 27.75 | — | — | — | — | — | — | (1) At entrance. (2) At inner end. *508.5 ft.—extreme useful length. |
| LA CROTAT, Dry dock . | 497.0* | 495.5 | 460.8 | 65.5 | 68.2 | 21.25 | 19.0 | 15.5 | — | — | — | — | — | — | |
| TOULON, Dry dock . | 1,366.0 | — | — | — | 118.0 | 39.3 | — | — | — | — | — | — | — | — | |
| CANNES, Floating dock . | 262.5 | — | — | — | — | 11.3 | — | — | — | — | — | — | — | — | |
| VILLEFRANCHE, Dry dock | 180.0 | — | — | 28.0 | 22.5 | — | — | — | — | — | — | — | — | — | |
| GENOVA, Dry dock . | 914.3 | — | — | 131.2 | — | — | 41.25 | 41.25 | — | — | — | — | — | — | |
| LA SPEZIA, Dry dock . | 704.4 | 689.6 | 667.3 | 105.5 | 90.4 | — | 32.4 | 26.25 | — | — | — | — | — | — | |
| LIVORNO, Dry dock . | 472.2 | — | 450.5 | 72.7 | 50.2 | — | 19.0 | 17.3 | — | — | — | — | — | — | |
| BAIA, Patent slip . | 508.0 | — | — | 29.5 | — | — | — | — | — | — | — | — | — | — | |
| NAPOLI, Dry dock . | — | 663.9 | — | 94.75 | — | 39.3 | 33.7 | 28.75 | — | — | — | — | — | — | |
| SALERNO, Patent slip . | 137.0 | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| TARANTO, Dry dock . | 811.0 | 798.4 | — | 133.75 | 131.1 | 39.3 | 38.7 | 36.1 | — | — | — | — | — | — | |

* In the case of Floating Docks, Patent Slips, etc., column (1) = extreme length; column (2) = length on blocks or cradle.

† In the case of Floating Docks, column (4) = breadth at top; column (5) = breadth at bottom of dock.

‡ In order to find the depths on Sill, etc., the quantities in columns (6), (7) and (8) should be applied according to sign to the predicted or calculated height of tide as obtained from the Admiralty Tide Tables.

APPENDIX II

LIST OF PRINCIPAL PORTS, SHOWING PARTICULARS OF DEPTHS, ETC.

| PORT | Depth below chart datum level | | Rise of tide | | REMARKS |
|----------------|--|--|--------------|------|--|
| | In channel of approach | In anchorage | Spgs. | Nps. | |
| Sète . . . | Passe de l'Est 5 fms. Passe de l'Ouest available only for small vessels | Available for vessels drawing 23 feet | — | — | At quays. Nouveau Bassin unusable owing to construction work (1950). |
| Port de Bouc. | 5½ fms. | Available for vessels drawing 25 feet | — | — | Work in progress deepening entrance and harbour to 39 feet (1950). |
| Marseille . . | Northern entrance deep Southern entrance 6 to 8 fms. | At least 5 fathoms in most basins | — | — | At quays. Several wrecks in northern entrance and in basins (1951). |
| Toulon . . | Deep | 6½ fms. | — | — | In Petite Rade. |
| Villefranche . | Deep | 6 to 10 fms. | — | — | |
| Ajaccio . . | Deep | 16 feet | — | — | Bassin de la Ville. |
| | Deep | 11 to 19 fms. | — | — | Mouillage des Capucins. |
| Bastia . . . | 5¾ to 6¾ fms. | Available for vessels drawing 12 feet | — | — | Vieux Port. |
| | 5¾ to 10 fms. | Available for vessels drawing 21 feet | — | — | Nouveau Port. |
| Imperia . . | 4¼ to 5 fms. | 3½ to 4½ fms. | — | — | At quays. Bacino di Ponente. |
| | 4 to 5½ fms. | 4 to 4½ fms. | — | — | At quays. Bacino di Levante. |
| Savona . . . | 4¾ fms. | 3½ to 5½ fms. | — | — | At quays. |
| Genova . . . | Deep | 4 to 9 fms. | — | — | At quays. |
| La Spezia . . | Passo di Ponente 7 fms. Passo di Levante 3¾ fms. | 4 to 7 fms. | — | — | |
| Livorno . . . | Bocca Nord 3½ fms. Bocca Sud 4½ to 6 fms. | 3 to 5 fms. | — | — | At quays. |

APPENDIX II (*continued*)

LIST OF PRINCIPAL PORTS, SHOWING PARTICULARS OF DEPTHS, ETC.

| PORT | Depth below chart datum level | | Rise of tide | | REMARKS |
|-----------------|-------------------------------|-----------------------------|--------------|--------|--------------------------------------|
| | In channel of approach | In anchorage | Spgs. | Nps. | |
| Portoferraio . | Deep 5 fms. | 8 to 10 fms. 8 fms. | — — | — — | Ancoraggio della Fossa. |
| Civitavecchia . | 4½ to 8 fms. | 3½ to 5 fms. | — | — | At quays. |
| Gaeta . . . | Deep | 5½ to 6 fms. 4½ fms. | — — | — — | Rada di Gaeta. Porto San Antonio. |
| Napoli . . . | Deep | 3 to 6 fms. | — | — | At quays. |
| Taranto . . | Deep 6½ fms. | 5 to 16 fms. 6 to 7 fms. | — — | — — | Mar Grande. Mar Piccolo |

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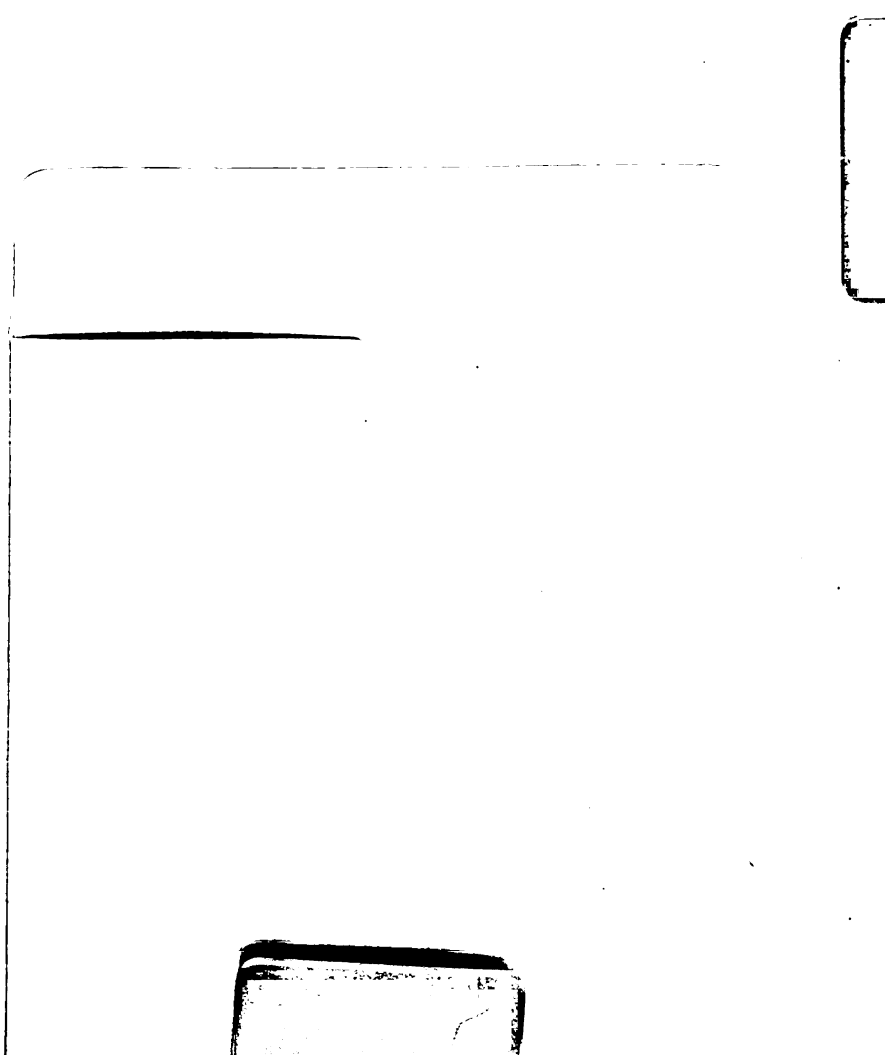
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